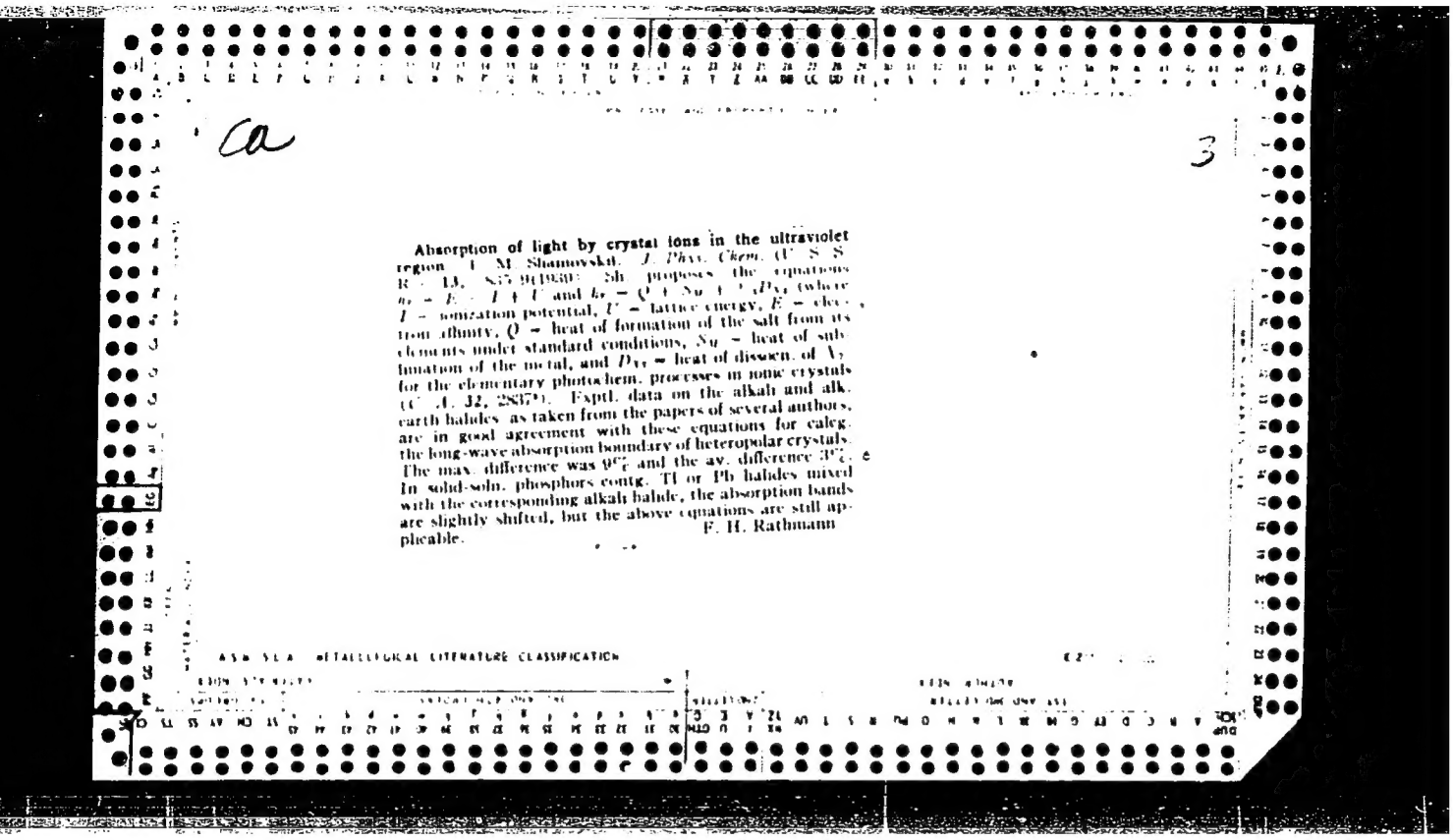
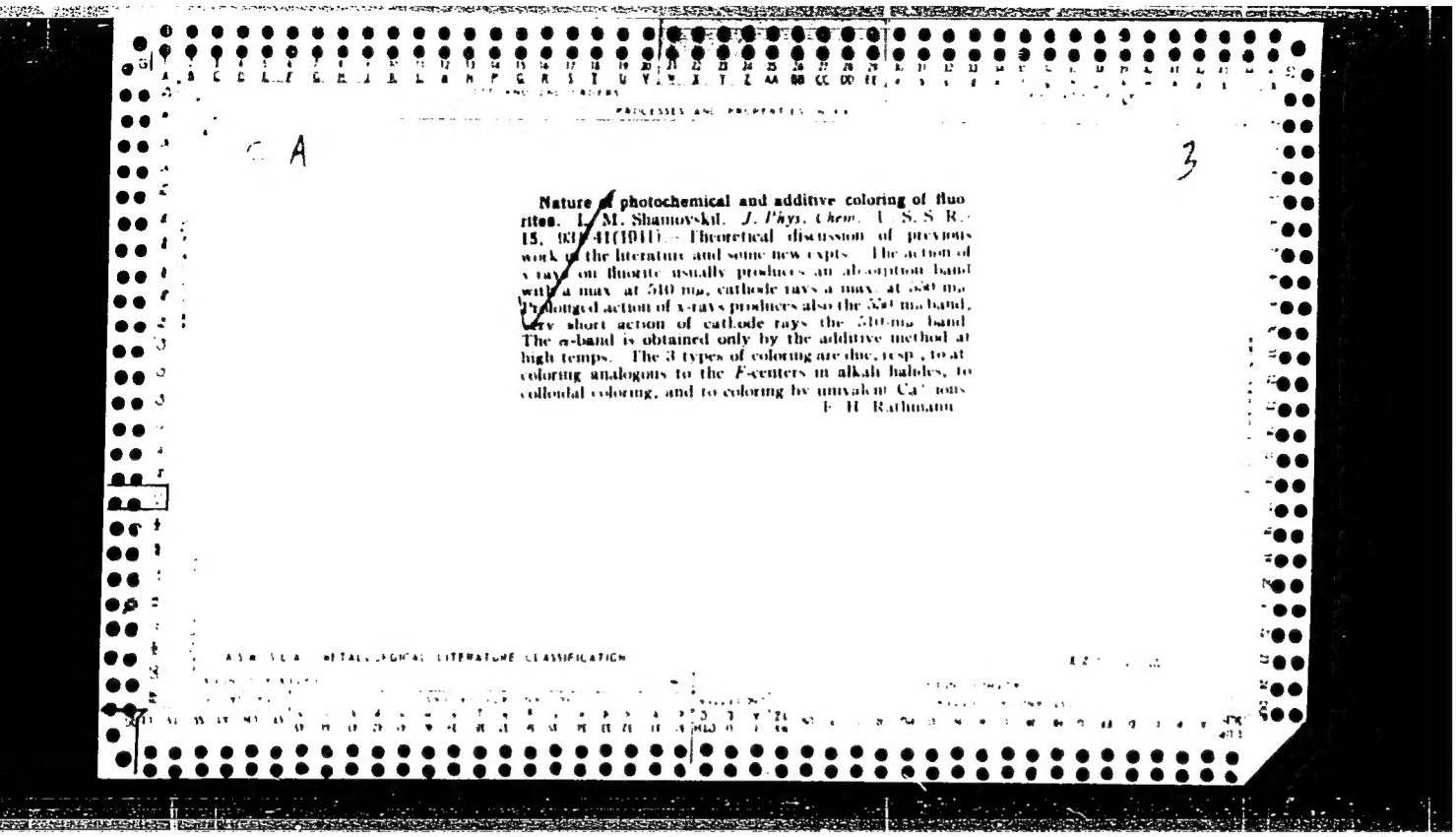


Ca

3

Absorption of light by crystal ions in the ultraviolet region. I. M. Shamovskii. *J. Phys. Chem.* (U. S. S. R.) 13, 837-9(1939). Sh. proposes the equations $h\nu = E - I + U$ and $h\nu = Q + Su + \frac{1}{2}D_{V_2}$ (where I = ionization potential, U = lattice energy, E = electron affinity, Q = heat of formation of the salt from its elements under standard conditions, Su = heat of sublimation of the metal, and D_{V_2} = heat of dissocn. of V_2 for the elementary photochem. processes in ionic crystals (*C. A.* 32, 2857⁹). Exptl. data on the alkali and alk. earth halides as taken from the papers of several authors, are in good agreement with these equations for calcg. the long-wave absorption boundary of heteropolar crystals. The max. difference was 9°Å and the av. difference 3°Å. In solid-soln. phosphors contg. Tl or Pb halides mixed with the corresponding alkali halide, the absorption bands are slightly shifted, but the above equations are still applicable.

F. H. Rathmann



C A

3

Nature of photochemical and additive coloring of fluorites. L. M. Shamovskiĭ. *J. Phys. Chem. U. S. S. R.* 15, 837-41(1941).—Theoretical discussion of previous work in the literature and some new expts. The action of x rays on fluorite usually produces an absorption band with a max. at 510 mμ, cathode rays a max. at 560 mμ. Prolonged action of x-rays produces also the 560 mμ band, very short action of cathode rays the 510-mμ band. The α-band is obtained only by the additive method at high temps. The 3 types of coloring are due, resp., to at coloring analogous to the *F*-centers in alkali halides, to colloidal coloring, and to coloring by univalent Ca^+ ions.

F. H. Rathmann

SHMKOVSKIY, I. M., KUPRIKOVA, L. I. and GOSTEVA, M. T.

"Mechanism of Additive Coloration of Alkali Halide Crystals," Dokl. Akad. Nauk SSSR, 83, No.6, 1952

nuclear Sci. abs.
V-7 Nov 30, 1953
Chemistry

MECHANISM OF ADDITIVE COLORATION OF ALKALI HALIDE CRYSTALS. L. M. Shamovskii [Shamovsky], L. I. Rybakova, and M. I. Gorelov. Translated from Doklady Akad. Nauk S.S.S.R. 91, 67-70(1953). 4p. (NSF-tr-82; D-91-67)

It is shown experimentally that the position and shape of the F band and the limiting concentration of the color centers are not affected by the choice of alkali metal if the coloration process takes place in saturated vapors of that metal. Additive coloring of KCl in vapors of K, Na, Rb, and Cs is discussed. The limiting concentration of the F centers was the same despite considerable differences in the density of the saturated vapors and in the ionization potential of the metals. The concentration of the F centers was determined by the optical method from the maximum and the half-width of the F band. It was inferred that the process of additive coloring of crystals is not reversible. It was established experimentally that, after additive coloring of a crystal in the saturated vapor of a metal, a lowering of the temperature under the same experimental conditions does not result in a decrease in the initial concentration of the F centers. The possibility of the transfer of electrons at high temperature from a metal into the crystal when the two are in direct contact was examined. A discussion of the kinetics of additive coloring is presented. The rate of penetration of a colored cloud into a crystal of KCl in contact with liquid K was found to be 2.03 mm/hr at 700°, 0.87 mm/hr at 600°, and 0.48 mm/hr at 500°. When the temperature is further reduced, the rate of coloring drops sharply. The removal of the anions from the lattice, even under the influence of a high potential gradient, is an extended process. An attempt was made to explain why the same concentration is obtained in the saturated vapors of different alkali metals. It was concluded that the process of additive coloring can be used to determine the equilibrium concentration of the anion sites. During additive coloring in nonsaturated vapors of the metal the limiting concentration of the F centers will depend not only on the presence of vacant anion sites in the crystal but also on the partial pressure of the metal in the surrounding vapor and on the temperature of the salt which is being colored. A discussion of the mechanism of bleaching of additively colored crystals is given. (J.A.G.)

SHAMOVSKIY, L. M.

USSR/Physics - Alkali-Halide Crystals 11 Jul 53

"Formation of V-Centers in Alkali Halide Crystals During Additive Dying in Halide Vapor," L. M. Shamovskiy, All-Union Inst of Mineral Raw Materials

DAN SSSR, Vol 91, No 2, pp 229-232

Criticizes work by E. Mollwo (Ann. d. Phys. 29 (1937)) from viewpoints of recent theories. Established that two maxima, studied by Mollwo, in ultraviolet part of absorption spectrum coincide with band of V-centers, appearing under irradiation by X-rays. Presented by Acad A. N. Terenin 12 May 53.

276T95

SHANOVSKII, I. M.

Intercrystalline films in single crystals of alkali halide salts and some of their properties. I. M. Shanovskii and L. M. Rodionova. *Doklady Akad. Nauk S.S.S.R.* 92, 1153-6(1953)(Russ.). translation issued as *U.S. Atomic Energy Comm.* NSF-tr-221(1954)). -Impurities in alkali halide crystals grown from the melt may be incorporated in the form of a solid soln. or as a ppt. in the form of thin films on grain boundary surfaces. The impurity distribution depends on the phase diagram for a given system and also on the physicochem. characteristics of the grain boundary. It is detd. by the equality of its activity in the solid soln. and in the adsorbed layer. Impurities which dissolve well in the starting salt have the lowest activity. Mixts. forming solid solns. of limited compn. lead to film formation in grain boundaries with only traces of impurities. Kinetic conditions of crystal growth influence the character and distribution of impurities. The presence of films can be established by means of additive coloration. Electrons introduced from a cathode into crystals contg. heavy metal impurities lead to mixed coloration. *F*-centers are formed with the subsequent transfer of electrons to the decreasing heavy metal traps. Reversal of the current results in the removal of *F*-centers only. Samples more heavily doped with impurity yield decreasing concns. of *F*-centers until a state is attained such that no *F*-centers can be formed even with potential gradients up to dielec. breakdown voltages. The min. impurity concn. for this to occur depends on the form of the phase diagram of the melt. Crystals may be additively colored slowly in alkali metal vapors. *F*-centers do not form. Coloration is not influenced by elec. fields. It is concluded that the new color centers result from the localization of electrons in activator sites lying in grain boundaries. This conclusion is reached from: (1) The limiting concn. of activator forming new centers is much lower than its total concn. in the sample. (2) Since electrons cannot be introduced into the conduction band, they are available neither for the formation of neutral activator atoms at lattice sites nor for localization in anion vacancies. Atoms of the alkali metal cannot diffuse within the lattice; thus, such migration is possible only in grain boundaries. (3) The impossibility of acceleration of the process of additive coloration by an applied elec. field is evidence that coloring takes place by migration of neutral atoms along grain boundaries followed by reactions of the sort: $AgCl + K = KCl + Ag$; $\Delta H = -73.0$ kcal. Further substantiating data are presented. Harry Letaw, Jr.

11/22/54

USSR/Chemistry Physical chemistry

Card : 1/1 Pub. 147 - 13/25

Authors : Shamovskiy, L. M., and Gosteva, M. I.

Title : Additive coloring of mixed KCl - $CdCl_2$ crystals

Periodical : Zhur. fiz. khim. 28/7, 1266 - 1271, July 1954

Abstract : Experimental data on the specific concentration of F-centers in KCl crystals with cadmium ion admixtures. The F-centers, originating during additive coloring in saturated alkali metal vapors, remain unaffected by any Cd^{++} concentration. The effect of heating the additionally colored crystal in saturated Cd-vapors, on the separation of the F-centers from the lattice, is discussed. Results obtained by measuring the absorption spectra of pure KCl crystals, after additive coloring in saturated vapors and rapid cooling, are shown in graphs. Thirteen references: 7 USA; 3 USSR and 3 German (1933 - 1953).

Institution : All-Union Scientific Resch. Instit. of Minerals, Moscow

Submitted : November 13, 1953

Shamovskiy, L.M.

USSR/Physics - X-ray analysis

Card 1/1 Pub. 22 - 13/40

Authors : Shamovskiy, L. M.; Rodionova, L. M.; Sidorenko, G. A.; and Zhvanko, Yu. N.

Title : X-ray investigation of monocrystal phosphori, NaCl & KCl, activated with silver chloride

Periodical : Dok. AN SSSR 99/2, 235-238, Nov 11, 1954

Abstract : Experiments were performed for the purpose of studying the nature of monocrystallic phosphori [NaCl, KCl, NaCl(Ag^+) and KCl(Ag^+)]. The experiments were conducted with the help of a special X-ray apparatus. Laue-grams were obtained and studied. The results and conclusions are presented. Eight references; 2-USSR (1923-1954). Illustrations.

Institution : The All-Union Scientific Research Institute for Raw Materials

Presented by: Academician N. V. Belov, June 24, 1954

SHAMOVSKIY, L. M.

USSR/ Physics - Chemistry

Card 1/1 Pub. 22 - 11/40

Authors : Shamovskiy, L. M., and Rodionova, L. M.

Title : Micro-hetergeneous structure of phosphori, KCI (Ag^+) and NaCI (Ag^+)

Periodical : Dok. AN SSR 99/3, 381-384, Nov 21, 1954

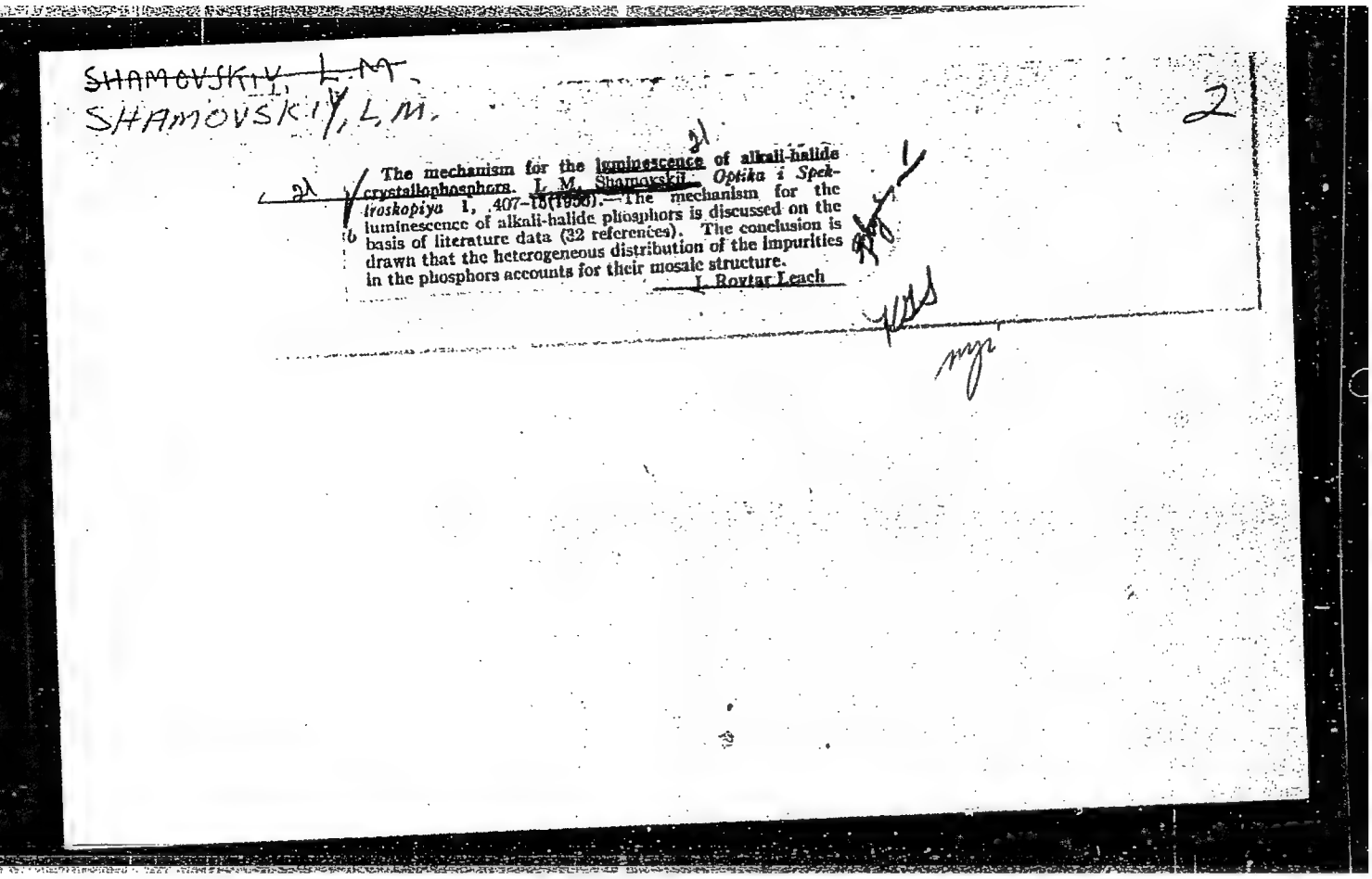
Abstract : Experiments with crystallic phosphori are described. The method of additive coloring was used for conducting the experiments which were intended to determine the properties of the activators. The experiments showed that ions of an activator react either with electrons (when the coloring takes place in vapors of alkali metals) or with "holes" (when the coloring takes place in a halide's gas (atmosphere)). Sixteen references: 5-USSR 11-Foreign (1930-1953). Illustrations; graph.

Institution : All-Union Institute of Mineral Raw Material

Presented by : Academician N. V. Belov, June , 1954

SHAMOVSKIY, L. M.

Physical-chemical investigation of reaction of manganese carbonate with calcium chloride. L. M. Shamovskij (All-Union Inst. Mineral Deposits, Moscow). *Issledovaniya po Prikład. Khim., Akad. Nauk S.S.S.R., Otdel Khim. Nauk* 1955, 39–49.—The equil. of the reaction $MnCO_3(s)$ + $CaCl_2$ (aq. soln.) ⇌ $CaCO_3(s)$ + $MnCl_2$ (soln.) was studied at 100° and 200° in concns. of $CaCl_2$ from 1 to 8 moles/l. of water. The expts. were made in sealed glass ampuls contg. pure $MnCO_3.{}^1/_2H_2O$ (in excess) and 15 ml. of $CaCl_2$ soln. After shaking for several hrs. in a const.-temp. bath, the ampuls were rapidly cooled, and the contents filtered through a glass filter and analyzed for Mn^{++} and Ca^{++}. In concns. of $CaCl_2$ up to 3.4 moles/l. the ratio $[Mn^{++}]/[Ca^{++}]$ = 6.65 × 10^{-3} was const. at 100°. This value underwent a sharp increase with the further increase in the concn. of $CaCl_2$, showing a sharp change in the isotherm at 3.42 moles/l. This concn. approx. corresponds to the concn. of $CaCl_2$ at the cryohydric point of its soly. in water. A similar change in the 200°-isotherm occurred at the lower concn. of $CaCl_2$. From the av. value of equil. const. (K_a = 0.00218), which remained practically unchanged within 2.8–4.8 moles/l. of $CaCl_2$, the calcd. value of ΔF_{298} was 4540 cal. Graphs and 14 references. A. P. Kotloby

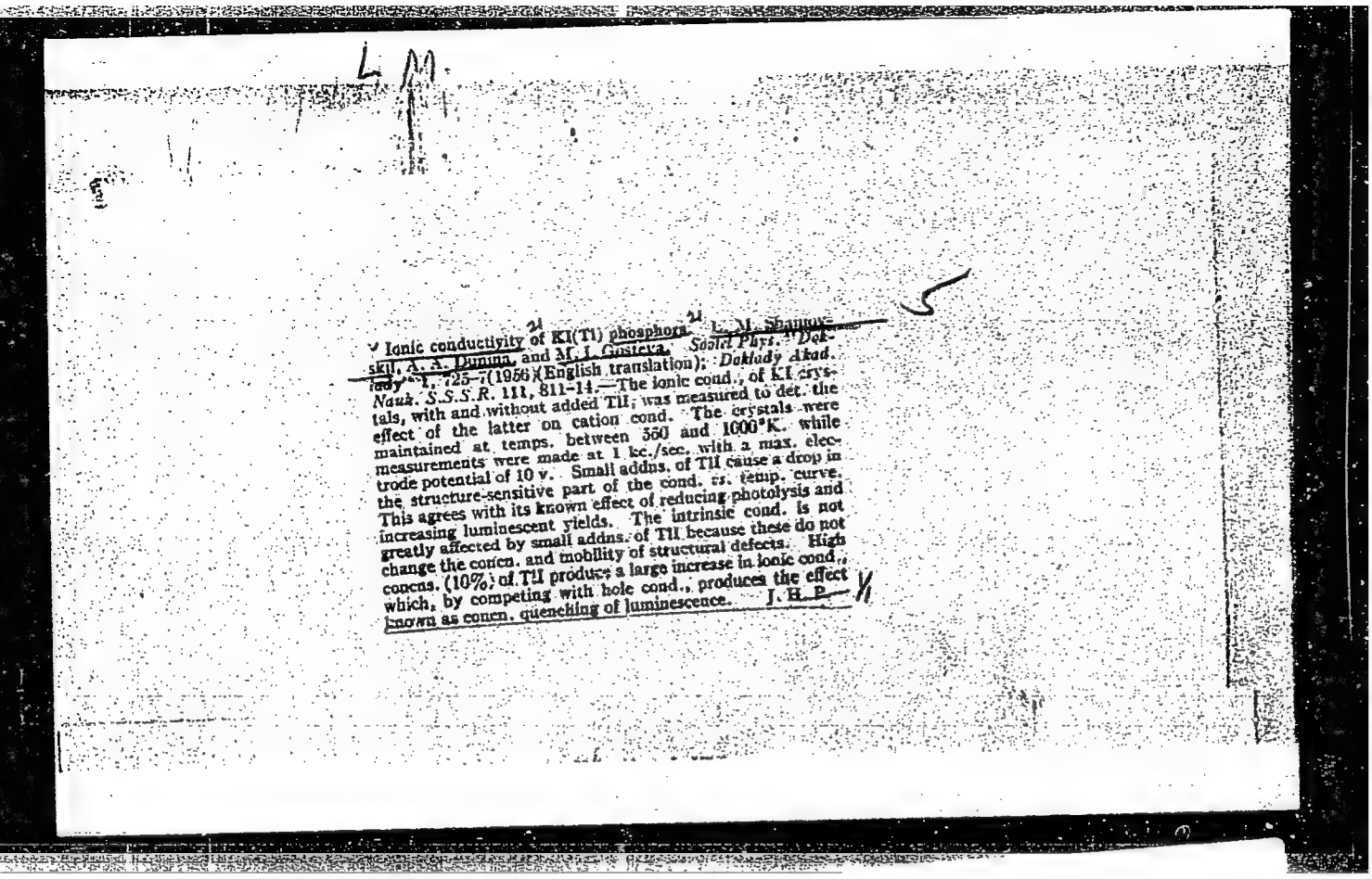


SHAMOVSKIY, L.M.

SHAMOVSKIY, L.M.

The mechanism for the luminescence of alkali-halide crystallophosphors. L. M. Shamovskii. *Optika i Spektroskopiya* 1, 407–16(1956).—The mechanism for the luminescence of alkali-halide phosphors is discussed on the basis of literature data (32 references). The conclusion is drawn that the heterogeneous distribution of the impurities in the phosphors accounts for their mosaic structure.

I. Rovtar Leach



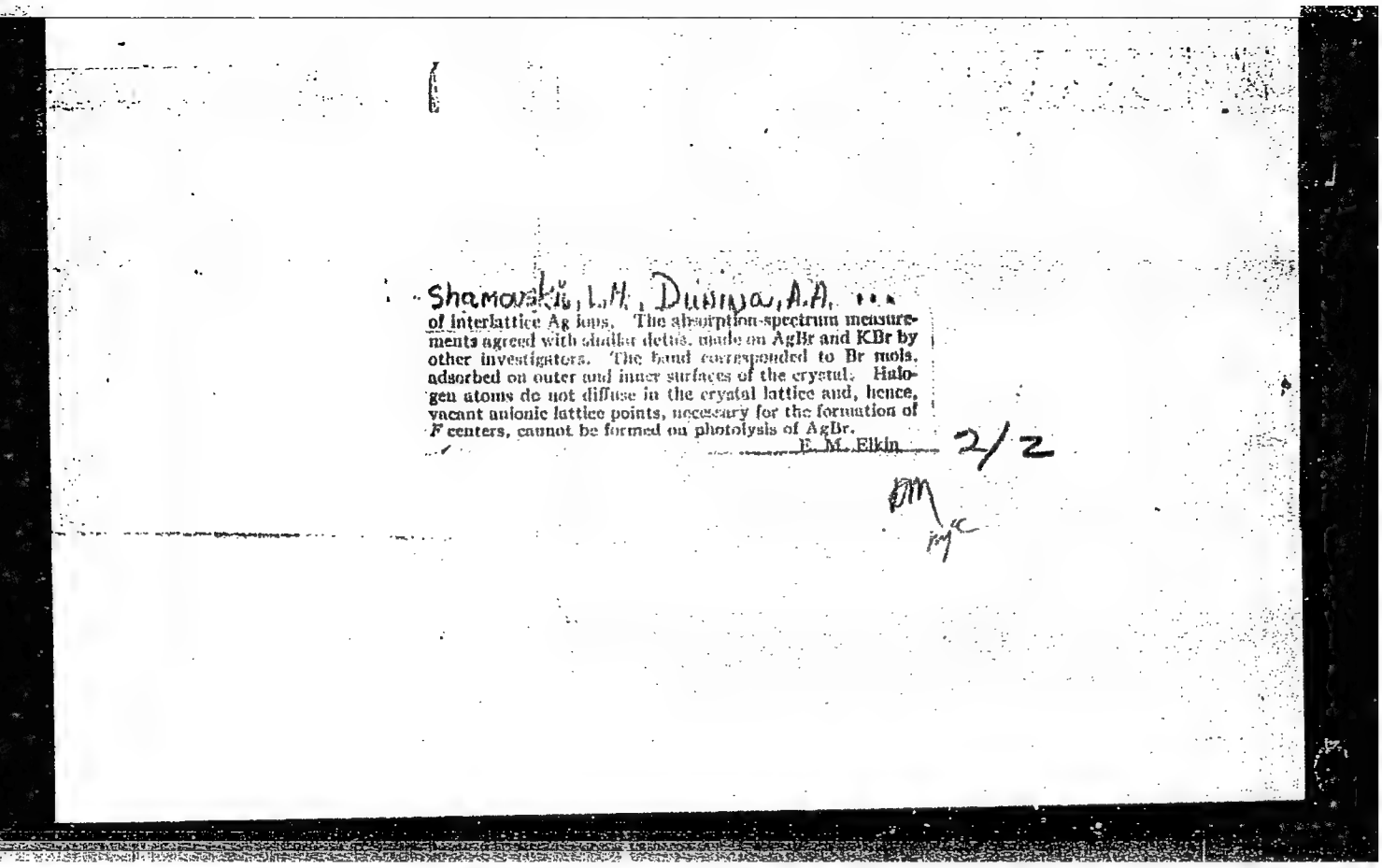
Ionic conductivity of KI(Tl) phosphors. L. M. Shamovskii, A. A. Dunina, and M. I. Gusteva. *Soviet Phys.—Doklady* 1, 725–7 (1956) (English translation); *Doklady Akad. Nauk. S.S.S.R.* 111, 811–14.—The ionic cond., of KI crystals, with and without added TlI, was measured to det. the effect of the latter on cation cond. The crystals were maintained at temps. between 560 and 1000°K. while measurements were made at 1 kc./sec. with a max. electrode potential of 10 v. Small addns. of TlI cause a drop in the structure-sensitive part of the cond. *vs.* temp. curve. This agrees with its known effect of reducing photolysis and increasing luminescent yields. The intrinsic cond. is not greatly affected by small addns. of TlI because these do not change the concn. and mobility of structural defects. High concns. (10%) of TlI produce a large increase in ionic cond., which, by competing with hole cond., produces the effect known as concn. quenching of luminescence. J. H. P.

-Category USSR/Electricity - Dielectrics G-2

Abs Jour Ref Zhur - Fizika, No 2, 1957, No 4115

energy of the thermal dissociation of the V_1 centers in silver bromide is found to be approximately 0.3 electron volts. No F-centers are formed in silver bromide owing to the absence of anion vacancies in its lattice.

Card . 2/2



Shamovskiĭ, L.M., Dunina, A.A. ...

of interlattice Ag ions. The absorption-spectrum measurements agreed with similar details made on AgBr and KBr by other investigators. The band corresponded to Br mols. adsorbed on outer and inner surfaces of the crystal. Halogen atoms do not diffuse in the crystal lattice and, hence, vacant anionic lattice points, necessary for the formation of *F* centers, cannot be formed on photolysis of AgBr.

E. M. Elkin

2/2

SHAMOVSKIY, L. M.

27

Distribution of activators in alkali halide phosphors. L. M. Shamovskii and Yu. N. Zhvanko. *Doklady Akad. Nauk S.S.S.R.* 111, 140-3(1956).—The location and intensity of the long-wave absorption band of a KI(Tl) phosphor was studied at different activator concns. (Tl, Tl_2O, Tl_2S, and TlI). The samples studied were picked out from the middle section of single crystals, and the samples for analysis were selected from the same section; Tl was detd. polarographically, and the absorption spectra were measured spectrophotometrically, for polished plates of the phosphors up to 0.68 mm. in thickness. The KI phosphors tested with all the activators used had max. absorption bands at 285 and 23[illegible] mμ. At equal Tl concn. the crystals differed only in the absorption coeff. values, and somewhat on the base half-width, with no addnl. bands characterizing the anions. In luminescence with ultraviolet excitation a band with a max. at 410 mμ was observed, and this max. was weakened and an addnl. very wide band with a max. at 460 mμ was observed with TlI as activator. The least sol. Tl compds. made the most intense absorption bands at equal Tl concns. The conclusions reached were that only part of the activators, which have a particular location in the crystal, activated the KI(Tl) phosphors; the activator ions were not active in the absorption spectra of the phosphors, or in their luminescence; the activator created a system of deep local levels for electrons or holes when distributed on the surface of contacts. X-rays produced a long and brilliant phosphorescence, which justified the opinion that the activator located on the crystal surface is active in crystals in which the activator is known to be present, but where there are structural defects for a temporary localization of electrons and holes.

W. M. Yanuberg

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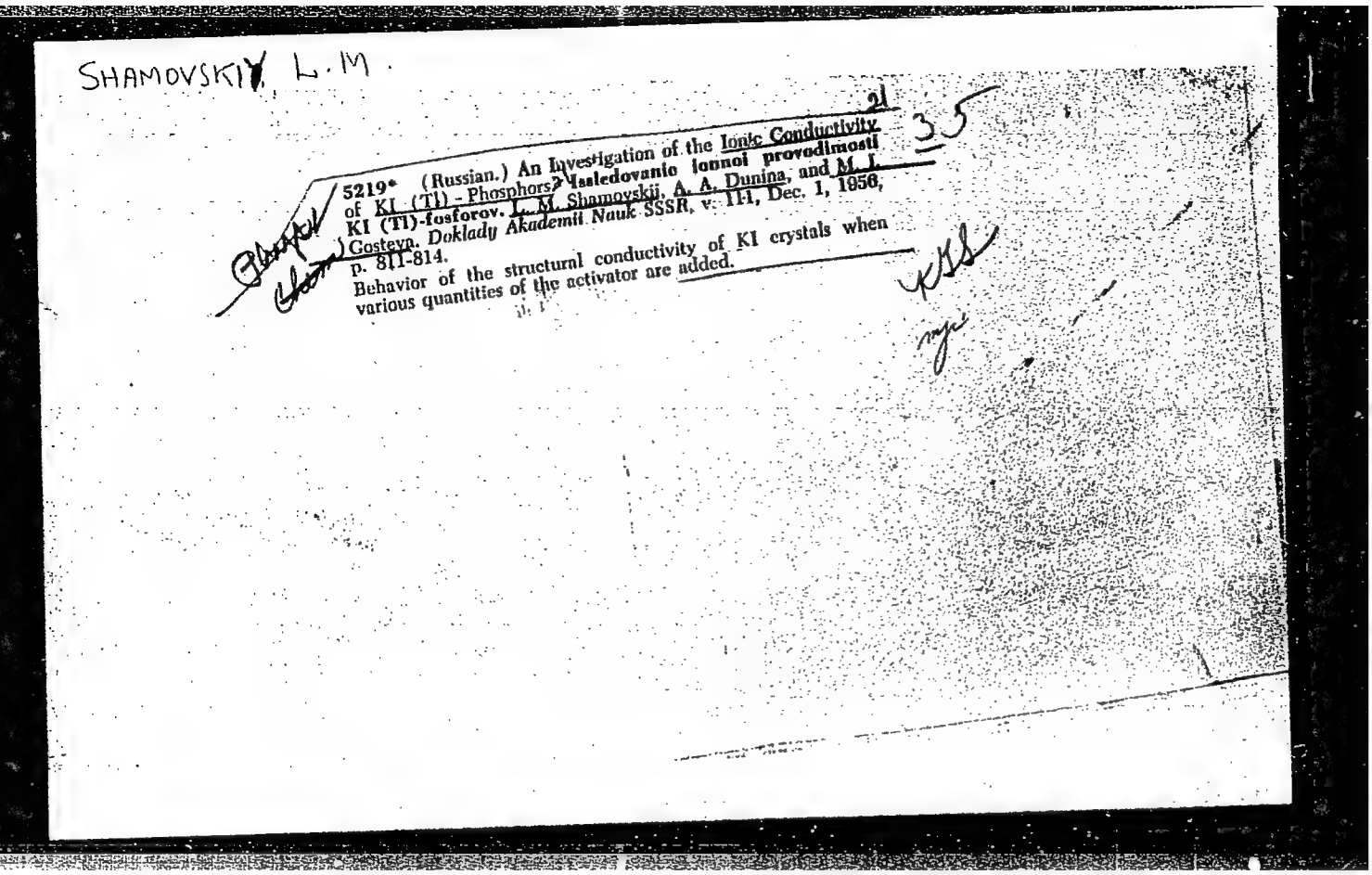

SHAMOVSKIY, L. M.

21

5219* (Russian.) An Investigation of the Ionic Conductivity of KI (Tl) - Phosphors? Issledovanie ionnoi provodimosti KI (Tl)-fosforov. L. M. Shamovskii, A. A. Dunina, and M. I. Gosteva. *Doklady Akademii Nauk SSSR*, v. 111, Dec. 1, 1956, p. 811-814.

Behavior of the structural conductivity of KI crystals when various quantities of the activator are added.

35

Shamovskiy, L. M.

Distr: 4E4j/4E3d

Monocrystalline alkali halide phosphors. L. M. Shamovskii and Yu. N. Zhvanko. U.S.S.R. 108,078, Nov. 25, 1957. InAs is used as activator to shift the luminescence to the red part of the spectrum. M. Hosch 21

4
2

51-5-8/26

AUTHORS: Shamovskiy, L.M., Dunina, A.A. and Zhvanko, Yu.N.

TITLE: The Structure of the Alkali Halide Phosphors and the Mechanism of the Processes of their Luminescence. (Struktura shchelochno-galoidnykh fosforov i mekhanizm protsessov lyuminestsentsii)

PERIODICAL: Optika i Spektroskopiya, 1957, Vol.2, Nr 5, pp.599-605 (USSR)

ABSTRACT: The authors study the interaction of electrons and holes with the activator in phosphors. Their results can be given by the band model proposed by Lambe and Klick (14). The latter two authors report luminescence as recombination of holes with electrons localised on the activator in the process of excitation of the phosphor. The authors of this paper supplement this model by limiting the possibility of such recombination to the activator which is situated on contact surfaces. The effect of the activator on the electrical conductivity was studied in crystals of KI and KI-Tl grown in vacuum. These samples were placed between platinum electrodes and heated in electrical furnaces. Their electrical conductivity was measured at 1000 c/s. Dependence

Card 1/3

The Structure of the Alkali Halide Phosphors and the Mechanism of the Processes of their Luminescence.

of the electrical conductivity on temperature is given in Fig.2. For pure KI (curve 1) the values in Fig.2 agree with those given in Ref.23. Straight line 2 in Fig.2 is an extrapolation of the intrinsic conductivity of pure KI to low temperatures. Curves 3, 4 and 5 give the conductivity of the KI-Tl phosphor with 0.01% by weight of TlI, 0.1% TlI and 10% TlI respectively. The results indicate that small amounts of TlI in KI decrease the structure-sensitive conductivity of the crystals. These effects are equivalent to strong cooling of KI. The luminescence of the pure crystals and of the phosphors is similar in nature. In both cases the contact surfaces are the places of localisation of electrons and holes which then recombine to emit radiation. The activator changes the properties of the contact surfaces by forming deeper levels of electron localisation. This changes the emission spectrum of the crystal. Small additions of the activator do not materially affect the intrinsic conductivity of the crystals. At high activator concentrations the structure-sensitive conductivity increases. Simultaneously ultraviolet luminescence yield decreases and emission in the visible spectrum becomes

Card 2/3

51-6-23/26

AUTHORS: Zhvanko, Yu. N., Morgenshtern, Z. L. and Shamovskiy, L. M.

TITLE: Study of the properties of phosphors KI-In and KI-Ga. (Issledovaniye svoystv fosforov KJ-In i KJ-Ga.)

PERIODICAL: Optika i Spektroskopiya, 1957, Vol.II, Nr.6, pp. 821-823. (USSR)

ABSTRACT: This paper deals with properties of KI phosphors activated with analogues of Tl. Single crystals of KI activated with various amounts of Tl, In and Ga were prepared. All samples were prepared under the same conditions in sealed quartz ampoules by the method described in Ref.3. Activators were introduced in metallic form. To avoid oxidation the crystals were prepared in an atmosphere of hydrogen. When excited with a mercury lamp KI-In emits yellow-green and KI-Ga orange light. The luminescence spectra of KI-Tl, KI-In and KI-Ga are shown in Fig.1. The absorption spectra of the three phosphors are shown in Fig.2.

Card 1/2

51-3-10/14

AUTHORS: Shamovskiy, L. M. and Zhvanko, Yu. N.

TITLE: Electron-acceptor Levels in Alkali Halide Crystalline Phosphors, which are due to the Activator. (Elektronno-aktseptornyye urovni v shchelochnogaloidnykh kristallofosforakh, svyazannyye s aktivatorom.)

PERIODICAL: Optika i Spektroskopiya, 1957, Vol.III, Nr.3, pp.267-271. (USSR)

ABSTRACT: Interaction of the activator in alkali halide phosphors with electrons and holes, which were introduced into the crystal by additive coloring, was studied. This was done by measuring absorption spectra of a KI-Tl crystal after additive coloring in iodine vapours. This coloring process introduces holes and removes an equivalent amount of cations. On subsequent cooling of the crystal some of these holes associate with vacant cation sites and form V-centres. The absorption spectrum of KI-Tl is shown in Fig.1 curve 1. The additional band due to V-centres in KI produced by coloring at 540°C is shown in Fig.1 curve 2. No changes occur in the activator bands and the crystal does not lose its power to luminesce. It is concluded

Card 1/3

Electron-acceptor Levels in Alkali Halide Crystalline Phosphors, which are due to the Activator.

that holes are not localised by the activator and do not cause transitions of the latter into excited or ionised states. Studies of interaction of electrons at the activator were made for KI-Tl and KI-In phosphors. The absorption spectrum of the latter is shown in Fig.2, curve 1. The activator bands of curve 1 disappear on additive coloring of KI-In in potassium vapours (Fig.2, curve 2). The absorption spectra of colored phosphors NaCl-Hg and KCl-Ag are shown in Fig.3. It was found that the activator was raised to the atomic state by capturing electrons at contact surfaces of polyhedral substructure. The activator band disappears then completely and the crystal loses its ability to luminesce. Additional bands characteristic of the activator atoms and their colloidal aggregates appear in the spectrum. Holes do not interact with the activator and ionised centres of emission are not formed. The results are best represented by a band model proposed by Lambe and Klick (Ref.13) for ZnS phosphors. The latter two authors

51-3-10/14

Electron-acceptor Levels in Alkali Halide Crystalline Phosphors, which are due to the Activator.

regard luminescence as a recombination of a hole with an electron localised at the activator. The present authors add a limitation that electrons can be localised only at contact surfaces. There are 3 figures and 13 references, 9 of which are Slavic.

ASSOCIATION: All-Union Institute of Mineral Raw Materials. (Vsesoyuznyy institut mineral'nogo syr'ya.)

SUBMITTED: January 21, 1957.

AVAILABLE: Library of Congress

Card 3/3

TITLE: Surface-Activated Phosphors (Poverkhnostno-aktivirovannyye fosfory)

3. The most soluble compounds of the activator (which form solid substitution solutions with the basic substance of the phosphor) give rise to less intensive bands of additional absorption at equal concentrations.

4. The intensity of activator bands in the phosphor absorption spectrum rises proportionally to the concentration of introduced impurities within certain limits.

In order to investigate the problem, in which of the two states of the activator it forms electron-acceptor levels, single crystals of KCl and NaCl were synthesized with an addition of various quantities of AgCl as an activator.

The dependence of absorption coefficient on the activator concentration is shown in Figure 3 in the article. The result confirms the conclusion on double distribution of the activator, and moreover, indicates that atomic centers arise only on the contact surfaces. It means that the activator creates electron-acceptor levels only on the boundaries of units of the micro-heterogeneous structure.

48-4-34/48

TITLE: Surface-Activated Phosphors (Poverkhnostno-aktivirovannyye fosfory)

A new phosphor was produced: single crystals of NaBr activated with InSe. When this phosphor is excited by light, a distinctly expressed photoconductivity is discovered in the activator bands. Photo-current carriers proved to be electrons.

Experimental materials obtained permit to conclude that activating impurities used in the growth of phosphors lead to polyedric structure of crystals. The mosaic structure of alkali-haloid phosphors is their fundamental property. The spectrum of additional absorption is determined by the activator located on intercrystalline surfaces. Deep localization levels of electrons arise on these contact surfaces. Their recombination with holes gives rise to liberation of energy in the form of radiation. The luminescence spectrum is determined by the difference in energies of localizaed holes and electrons in contact surfaces. Therefore, alkali-haloid phosphors are surface-activated crystals.

The article contains 6 graphs.

The bibliography lists 30 references, of which 14 are Slavic.

Card 3/4

48-5-18/56

SUBJECT: USSR/Luminescence

AUTHORS: Shamovskiy L.M., Dunina A.A. and Zhvanko Yu.N.

TITLE: Structure of Alkali-Haloid Phosphors and Mechanism of Luminescence processes (Struktura shchelochno-galoidnykh fosforov i mekhanizm protsessov lyuminestsentsii)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, 1957, Vol 21, #5, pp 675-677 (USSR)

ABSTRACT: Investigations carried out have shown that:

1. In the presence of holes (and V-centers) the position, shape and intensity of activator bands in alkali-haloid phosphors remains unchanged;

2. On the contrary, the activator localizes electrons. At that, additional absorption bands completely disappear, and at the same time the crystal loses its ability to be luminescent. It was established that the centers of electron localization are in the contact surfaces of polyhedral structure of phosphors.

3. Ions of an activator in the lattice nodes are neither donors nor acceptors of electrons and therefore, take no immediate part in the phenomena of luminescence.

Card 1/2

48-5-44/56

SUBJECT: USSR/Luminescence

AUTHORS: Zhvanko Yu.N., Morgenshtern Z.L. and Shamovskiy L.M.

TITLE: Investigation of the Properties of KJ-In and KJ-Ga Phosphors (Issledovaniye svoystv fosforov KJ-In i KJ-Ga)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, 1957, Vol 21, #5, p 752 (USSR)

ABSTRACT: PHosphors based on potassium iodide and activated by In and Ga were produced and investigated.

The KJ-In crystals show yellow-green luminescence ($\lambda_{max} \sim 50$ mμ) and KJ-Ga crystals show orange luminescence ($\lambda_{max} \sim 600$ mμ) at photoexcitation.

The introduction of In or Ga, as well as Tl, leads to the arising of characteristic activator bands on the long wavelength edge of the internal absorption of a basic substance. In the KJ-In phosphor are observed bands with $\lambda_{max} \sim 230$ mμ and 262 mμ and one weak band with $\lambda_{max} \sim 310$ mμ. In the absorption spectrum of KJ-Ga two intensive bands with $\lambda_{max} \sim 230$ mμ

Card 1/2

51-4-1-19/26

Authors: Lunina, A. A., Morgenshtern, Z. L. and Shamovskiy, L. M.

Title: Absorption and Luminescence Spectra of Indium-Activated Alkali-Halide Monocrystals. (Spektry pogloshcheniya i lyuminestsentsii shchelochno-galoidnykh monokristallov, aktivirovannykh indiyem.)

Publication: Optika i Spektroskopiya, 1958, Vol. IV, Nr. 1, pp. 105-109. (USSR)

Abstract: Shvanko, Morgenshtern and Shamovskiy (Ref.4) studied KI phosphors activated with thallium, indium and gallium, and showed that the absolute quantum yield in KI-In is very high (of the order of 0.95). The present communication reports investigation of the absorption, excitation and luminescence spectra of monocrystals of sodium, potassium, rubidium and caesium chlorides, bromides and iodides, all activated with indium. Monocrystals were produced from melt in sealed quartz ampoules (Ref.8). The activator was

Card 1/6

51-4-1-19/26

Absorption and [illegible] spectra of Indium-activated alkali-halide monocrystals

[illegible] introduced in metallic form or as a univalent salt [illegible] the solid union at the time. The absorption spectra were measured on polished plates using a СФ-4 spectrophotometer. For λ 220 mμ, measurements were made using a hydrogen lamp (supplied by I. A. Prager), a vacuum monochrometer with mirrors and a fluorite prism. A photomultiplier ФЭУ-19 with a luminescent light converter and an amplifier was used as the receiver. To measure absorption spectra the crystal was placed in front of the entrance slit of the monochrometer. The excitation spectra were measured on a СФ-4 spectrophotometer, using a

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51-4-1-19/20

Absorption and luminescence spectra of Indium-activated alkali-halide monocrystals.

ФЭУ-19 photomultiplier and an amplifier. The emission spectra excited by light in the activator absorption bands are measured on a УМ-2 monochromator with a ФЭУ-19 photomultiplier and an amplifier. When the emission spectrum lies in the ultraviolet region measurements are also made using a Hilger quartz monochromator and ФЭУ-19. The absorption spectra for the monocrystals studied are shown in Fig.1. The positions of the absorption maxima are given in the table on p.107. All spectra exhibit a long-wavelength absorption band (I) and a more intense short-wavelength band (II). One follows a third (I.I) band in the UV. Bands I and II are displaced to the long-wavelength side of the emission from the pilot

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Absorption and luminescence spectra of Indium-Activated Alkali-Halide Monocrystals.

iodides. The absorption coefficient of the long-wavelength band increases with increase of the activator concentration somewhat faster than in the short-wavelength band. CsCl-In samples break up into small crystals in mechanical preparation. For this reason the absorption spectrum of CsCl-In was estimated from the spectral distribution of photo-excitation. The excitation spectra for all the phosphors studied are in general similar to the absorption spectra. By way of an example the excitation spectra of KCl-In, RbBr-In and CsI-In are given in Fig.2. The emission spectra are shown in Fig.3. The maximum of the

Card 4/6 emission band is displaced towards long wavelengths on

Absorption and Luminescence Spectra of Indium-Activated Alkali-Halide Monocrystals.

transition from chlorides to iodides. The results obtained were compared with similar results for the same phosphors activated with thallium (Ref.2). In general, the results are similar for In and Tl activators. The absorption bands of indium-activated phosphors occur at longer wavelengths than the absorption bands of thallium-activated phosphors. Furthermore, for indium-activated phosphors the authors found considerable splitting of the absorption bands even at room temperature, while for thallium-activated phosphors such splitting occurred only at low temperatures (Ref. 10). The authors thank M. D. Galanin for his interest, N. V. Kostin for help in measurements, and K. I. Gostev for help in preparation of phosphor monocrystals.

51-4 -1-19/36

Absorption and Luminescence Spectra of Indium-Activated Alkali-Halide Monocrystals.

There are 3 figures, 1 table and 10 references, of which 6 are Russian, 3 German and 1 English.

ASSOCIATION: Physics Institute imeni P. N. Lebedev, Academy of Sciences of the USSR; All-Union Institute of Mineral Raw Materials. (Fizicheskiy institut im. P. N. Lebedeva AN SSSR; Vsesoyuznyy institut mineral'nogo syr'ya.)

SUBMITTED: April 11, 1957.

AVAILABLE: Library of Congress.

1. Alkali halide crystals-Absorption 2. Alkali halide crystals-Luminescence spectra

Card 3/6

48-1-1/20

AUTHORS: Shamovskiy, L. M. , Rodionova, L. M. , Glushkova, A. S.

TITLE: A Method for the Growing of Alkali-Halide-Phosphors for Scintillation Counters (Metodika vyrashchivaniya shchelochno-galoidnykh fosforov dlya stsintillyatsionnykh schetchikov)

PERIODICAL: Izvestiya AN SSSR Seriya Fizicheskaya, 1958, Vol. 22, Nr 1, pp. 3 - 11 (USSR)

ABSTRACT: The method worked out here for the growing of monocrystals is based on a modified method by Stokbarger. Crystallization is carried out from the melt in soldered cylindrical ampules of quartz-glass. In this variant the difficulty connected with the dosing of the activator no longer exists. At the same time, a complete isolation of the salt from atmospheric humidity is attained, and thus the possibility of a chemical decomposition is excluded. The velocity with which the monocrystal is grown is given by the displacement of the ampule against the furnace. The furnace is an echelon furnace and is divided into two sections by a ring wall. At the tip of the ampule-cone an inoculation forms which, in the further process, imparts the orientation to the entire crystal. It is necessary that in the crystallization zone, at the level of the ring wall or somewhat higher, the temperature distribution

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A Method for the Growing of Alkali-Halide-Phosphors for Scintillation Counters

in the cross section has the shape of a paraboloid of revolution with the tip in the center of the ring wall. Under these conditions the crystallization begins from a uniform center at the axis of the quartz ampule and all admixtures not taken up by the crystal are displaced upwards to the melt and to the walls of the vessel. The constancy of the temperature in the furnace is attained by a controlling potentiometer by means of the connection of a series resistance. A platinum-platinum rhodium-thermocouple serves as transmitter for the potentiometer. The isotherm of the growth in the crystal must be unchanged during the entire process of growing. In the second chapter the activator-distribution in the crystal phosphor is investigated. The concentration of the additions in the various parts of the monocrystal does not remain constant in all those cases in which in the growing of the crystal from the melt the compositions of the solid and the liquid phase with regard to the equilibrium conditions are not in agreement. Most frequently the distribtuion coefficient of the introduced and the accidental admixtures between these two phases is smaller than one. Additional factors are impressed upon the equilibrium character of the distribution of additions. These factors are dependent on the crystallization velocity and on the diffusion coefficient of the additions in the melt. It is shown that the amplitude of

A Method for the Growing of Alkali-Halide-Phosphors for Scintillation Counters

the scintillation impulses of the given monochromatic γ-radiation changes with the increase in the activator-concentration in the crystal phosphor. The third chapter deals with the selection of the activator and its dosing. It is shown that the less soluble compounds, in the case of an equal molar concentration in phosphors, form a hundred times higher concentration of the centers of the additional absorption and luminescence in one unit of volume. It is shown that only part of the introduced thallium-additions play the part of an activator in the phosphors. When sufficiently pure salts are used, quite transparent monocrystals can be obtained with a Tl_2O-activator and the process of growing becomes considerably simpler. The last chapter treats the annealing of the crystal phosphors. As the alkali-halide-crystals possess a low thermal conductivity, deformation-forces causing a mosaic structure form during a too rapid cooling. The annealing liquidates this mosaic structure. The monocrystals must withstand a high temperature and must then be slowly cooled. It is shown that at high temperatures, even though the diffusion coefficient of the additions in the crystal lattice becomes higher, the heat-

A Method for the Growing of Alkali-Halide-Phosphors for Scintillation Counters

-treatment nevertheless, as the test show, does not lead to a compensation in the composition of the crystal phosphor. In the author's opinion, the most important cause of the decrease in the light-response of the luminescence in polyhedral crystals is the following: the luminescence of the crystal phosphors is the result of a recombination of the electrons with the holes at the contact-surfaces formed by the activator. The luminescence depends on that part of the electrons and holes that reach these surfaces in their motion from the place where they form. A recombination of these contact-surfaces, however, is realized at ordinary temperatures without a radiation. But other inner surfaces not connected with the activator may also occur in the crystal. These are effective traps for the electrons and holes and diminish the emission of light in the scintillation. Good annealing improves the structure of the crystals. There are 8 figures, and 6 references, 3 of which are Slavic.

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43-1-1/20

A Method for the Growing of Alkali-Halide-Phosphors for Scintillation Counters

ASSOCIATION: All-Union Institute for Mineral Raw Materials
(Vsesoyuznyy institut mineral'nogo syr'ya)

AVAILABLE: Library of Congress

1. Crystals 2. Single crystals-Growth

Card 5/5

[illegible]

AUTHORS: [illegible]

TITLE: On the Polyhedral Substructure of the Single-Crystals [illegible] Halide Phosphorus (K voprosu [illegible] strukture monokristallov shchelochno-galoidnykh fosforov)

PERIODICAL: Zhurnal [illegible], 19[illegible], Vol 5[illegible], Nr [illegible], pp [illegible] (USSR)

ABSTRACT: Monocrystals of alkali-halide phosphorus are prepared by growing them in a solution to which an activator has been added. They have a polyhedron substructure. This results from the two-fold behavior of the activator: one part enters as a solid solution while the other part, usually smaller, forms inner contact surfaces. The substructure shows itself by a cleavage in the interference spots of the Laue exposures, especially after careful annealing. This effect cannot be confused with the doubling of the diffraction patterns which arise through the light penetration of thicker plates. From the publication of the authors (Ref 3) 8 Laue pictures are reproduced. The present article criticizes V. F. Pisarenko (Ref 12), who

Card [illegible]

On the Polymorphic Substructure of the Single-Crystals of Alkali-Halide Phosphors

checked part of the papers of the authors. He did not distinguish between cleavage and doubling in the interference spots. Two printing errors in the earlier paper (Ref 4) are corrected here. There are 8 figures and 15 references, 8 of which are Soviet.

Card

STARTSEV, V.I., otv. red.; ALEKSANDROV, B.S., red.; BELYAYEV, L.M., red.; ERUDZ', V.G., red.; VOYTOVETSKIY, V.K., red.; GALANIN, M.D., red.; DISTANOV, B.G., red.; KLIMOV, A.P., red.; SEMENENKO, M.G., red.; SHAMOVSKIY, L.M., red.

[Scintillators and scintillation materials] Stsintilliatory i stsintilliatsionnye materialy. Moskva, Gos. komitet Soveta Ministrov SSSR po khimii, 1960. 319 p. (MIRA 15:4)

1. Koordinatsionnoye soveshchaniye po stsintilliatoram. 2nd, 1957. (Scintillation counters)

84606

S/181/60/002/010/029/051
B019/B056

24.7700 (1043 only)

AUTHORS: Shamovskiy, L. M., Dunina, A. A., and Gosteva, M. I.

TITLE: The Energy of the Thermal Dissociation of the F-Centers in KCl

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 10, pp. 2526 - 2535

TEXT: This article was read at the Soveshchaniye po fiziki shchelochnogaloidnykh kristallov (Conference on the Physics of Alkali-halide Crystals), which took place in July 1959 at Tartu. In the introduction, the results obtained on the semiconductor properties and luminescence of crystal phosphors are discussed. Among other papers, those of S. I. Pekar (Ref.2) are mentioned. For the further development, the authors suggest investigating the equilibrium concentration of the conduction electrons in colored crystals, which have a high F-center concentration compared to that of the equilibrium-structural defects. This permits the exact determination of n-type conductivity of crystals with F-centers and makes it possible to calculate the thermal ionization

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The Energy of the Thermal Dissociation of the F-Centers in KCl

S/181/60/002/010/029/051
B019/B056

energy of F-centers from their temperature dependence. Investigations were carried out on KCl-single crystals, which had been dyed in saturated potassium vapors at 550, 600, and 650°C. The F-center concentration at these temperatures was $1.9 \cdot 10^{17}$, $4.4 \cdot 10^{17}$, and $9.1 \cdot 10^{17} cm^{-3}$, respectively. The electric conductivity was measured by means of a 1000 c alternating current. The Fig. shows the electric conductivities σ as function of the temperature of the samples, which were quenched from the three afore-mentioned temperatures. In the temperature range of from 350 - 500°C, this dependence is well described by the following straight lines: 1) $\sigma = 16.6 \exp(-23550/kT) ohm^{-1} \cdot cm^{-1}$

2) $\sigma = 30.9 \exp(-23780/kT) ohm^{-1} \cdot cm^{-1}$ and

3) $\sigma = 47.3 \exp(-26600/kT) ohm^{-1} \cdot cm^{-1}$. Under the assumptions that in alkali halide salts a Frenkel-defect structure exists at high temperatures, that in coloring the interstitial anions are replaced by electrons, that by the coloring no new microdefects are produced, and that in the crystals quenched from high temperatures the original F-center concentration remains conserved, the authors used the following formula:

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The Energy of the Thermal Dissociation of the F-Centers in KCl

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for the electric conductivity: $\sigma = ev_e n_F \exp(\Delta S/2k)\exp(-\varepsilon_F/2kT)$. Thus, they obtain for the mean value of thermal dissociation energy $\varepsilon_F = 2.05$ ev. For the n-type conductivity of the samples quenched at 550 and 600°C, the authors obtain the formula $\sigma = ev_e n_F^{1/2} 5 \cdot 10^7 T^{3/4} \exp(-\varepsilon_F/2kT)$. There are 1 figure and 18 references: 8 Soviet, 3 US, 1 Czechoslovakian, 3 German, and 1 Dutch.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut mineral'nogo syr'ya (All-Union Scientific Research Institute for Mineral Raw Materials)

SUBMITTED: November 16, 1959

Card 3/3

SHAMOVSKIY, L.M.; SHIBANOV, A.S.

Structural defects in alkali halide crystal phosphors. Fiz. tver.tela 3 no.7:2123-2130 Jl '61. (MIRA 14:8)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut mineral'nogo syr'ya, Moskva.
(Alkali metal halides) (Crystals--Defects)

89239

S/048/61/025/001/005/031
B029/B067

9,6150 (also 1137, 1395)

AUTHORS: Shamovskiy, L. M. and Pipinis, P. A.

TITLE: Investigation of luminescence in alkali halide phosphors

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, v. 25, no. 1, 1961, 31-37

TEXT: For the purpose of a further explanation of the mechanism of recombination luminescence, the present study is devoted to NaBr-In and KBr-In phosphors which were activated by bromides of mono- and trivalent indium when they were grown from the melt. The hypothesis of electron recombination with localized holes with subsequent transfer of the liberated energy to the activator by a resonance or exciton mechanism is not very probable, for there is convincing evidence for the opposite direction of the processes of recombination luminescence. The liberation of holes from the V-centers is sufficient for the emission of light sums. Fig. 1, e.g., shows the curves of thermal emission of NaBr-In phosphors which were excited by light within the activator bands at various temperatures. Summing up: In phosphors excited at low temperatures, the

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Investigation of luminescence in S/048/61/025/001/005/031
B029/B067

bands of thermal emission correspond chiefly to the liberation of holes from the level of capture and their recombination with the "atomic" centers of luminescence. 2) The ions of the activator enter the NaBr lattice without changing their valency. The concentration of donor levels increases with the density of localized holes. If the phosphor NaBr-In^{3+} (I) is excited at -28°C, then the curve of thermal emission has two peaks at -8°C and 26°C (M-levels). In the same phosphor excited at 36°C (thus behind the boundaries of the M-centers), an emission band is observed at 58°C. This band corresponds to the range of thermal ionization of the F-levels. Independently of the conditions of photo-excitation of phosphors, the light sum in the case of carrier localization is stored on the same cation and anion vacancies, but in various compositions. After the filling of the low capture levels, no vacancies remain in the crystal and, thus, it loses its ability to store the light sum on the shallow levels. After optical excitation of the phosphors at low temperatures, peaks on the curves of thermal emission are never observed together with the ionization of the F-levels. The emission of the light sum by exposure in the F-band at low temperature takes place slowly. The stimulating effect of light from the F-band is closely related to the character (the depth)

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Investigation of luminescence in S/048/61/025/001/005/031
B029/B067

of the hole-like trapping centers. This indicates that the escape of electrons does not lead to the immediate emission of the light sum but gives only rise to the subsequent hole escape from the trapping level and hole recombination with the atomic centers of luminescence. A high density of "atomic" centers and a low concentration of F-levels arises on excitation of crystals with a relatively high activator concentration. Repeated excitation and emission of the phosphors leads to their sensitizing. A table shows the depth of the trapping levels of carriers in KBr-In and NaBr-In phosphors according to data on thermal emission. By analysis of thermal luminescence, exo-electron emission, and optical scintillation the authors came to the following conclusions: The observed emission of the phosphors investigated here corresponds to the "hole scheme of recombination" for any kind of phosphorescence excitation. The centers of luminescence are atomic centers. In an appendix to the paper, remarks made by Ch. B. Lushchik during the discussion and Shamovskiy's reply are mentioned. I. V. Yayek (Tartu) is mentioned. This is the reproduction of a lecture read at the Ninth Conference on Luminescence (Crystal Phosphors), Kiyev, June 20-25, 1960. There are 2 figures, 1 table, and 17 references: 11 Soviet-bloc.

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Investigation of luminescence in .....

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B029/B067

ASSOCIATION: Vsesoyuznyy institut mineral'nogo syr'ya (All-Union Institute of Mineral Raw Materials). Fizicheskiy fakul'tet Moskovskogo gos. universiteta im. M. V. Lomonosova (Division of Physics, Moscow State University imeni M. V. Lomonosov)

Legend to Table: 1) temperature of the maximum of thermal emission, °C; 2) characteristic of the carrier trapping level of KBr-In; 3) depth of the trapping level, ev.

1 Температура максимума термовысвечивания, °С	2 Характеристика уровней захвата KBr—In	3 Глубина уровней захвата E, eV	1 Температура максимума термовысвечивания, °С	2 Характеристика уровней захватаNaBr—In	3 Глубина уровней захвата E,eV
—186°	X_2^-	0,19	—165°	X_2^-	0,23
—155°	V_1	0,23	—140°	V_1	0,29
—130°	F'	0,29	—125°	F'	0,32
—100°	?	0,37	— 95°	?	0,39
20°	V_2	0,64*	— 65°	V_2	0,45
40°	M	0,68	25°	M	0,65
125+135°	F	0,86—0,88	58°	F	0,71
205°	V_3	1,03	110°	V_3	0,83
245°	X_3^-	1,12			

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20827

S/048/61/025/003/015/047
B104/B214

24 7500 (1136, 1143, 1160)

AUTHORS: Shamovskiy, L. M. and Shibanov, A. S.

TITLE: Lattice defects of crystal phosphors

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, v. 25, no. 3, 1961, 350-353

TEXT: This paper was read at the Ninth Conference on Luminescence (Crystal Phosphors) held in Kiyev from June 20 to June 25, 1960. In earlier papers, it was established by the present authors that the spectra of additional absorption and the luminescence of alkali halide phosphors are determined by activator ions which related to lattice defects. The character of the defects was not clarified in those papers. Attempts are made in this paper to clarify these questions by coloring the dislocations in the crystal volume and by selective etching of the surface of KCl-Ag and NaCl-Ag phosphors. The visualization (decoration) of the dislocations was made by additive coloring at 650-700°C for several days, and the selective etching was done with glacial acetic acid. It was found that the dislocation lines in the volume of the crystal made visible by chains

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of colloidal metal particles correspond exactly to the etch pits on the surface of the crystal. The density of dislocations and the dimensions of the disoriented blocks do not depend on the concentration of the activator. The average size of the blocks in thoroughly annealed crystals is 200 - 500 μ. The density of dislocations depends on the heat treatment of the crystal and can change by 3 - 4 orders of magnitude. The coarse sub-structure of dislocations cannot be brought into agreement with the conception of two types of distribution of activators in the crystal and with the fact that the luminescence originates from the lattice defects. Experiments were performed to see if there exists a structure of defects besides the coarse mosaic structure in the alkali halide phosphors. This sub-microstructure was discovered in additionally colored crystals with a high activator concentration under the microscope by large magnification. The fine structure of defects appears in the form of accumulations of fine-disperse particles of the metal activator. It could be further established that the sub-microstructure is a peculiarity of crystal phosphors, and that the fine structure of defects cannot be detected by selective etching. Ch. B. Lushchik and A. S. Shibanov took part in the discussion of this paper. In this discussion, it was established that

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Lattice defects of crystal... S/048/61/025/003/015/047
B104/B214

the decoration of the substructural defects in crystal phosphors is not adequate for an affirmation on the localization of luminescence centers in lattice defects. R. I. Gindina is mentioned, and reference is made to the work of Dutch physicists. There are 1 figure and 9 references: 5 Soviet-bloc and 4 non-Soviet-bloc. The references to English-language publications read as follows: Amelinckx S., Acta Metallurgica, 6, No. 1, 34 (1958); Gilman, J. J., Johnston, W. G., J. Appl. Phys., 27, No. 9, 1018 (1956); Barber, D. J., Harvey K. B., Mitchell, J. W., Philos. Mag., 2, No. 17, 704 (1957).

Card 3/3

S/181/62/004/002/022/051
B101/B102

AUTHORS: Shibanov, A S., and Shamovskiy, L. M

TITLE: Particularities of the additive coloration of alkali-halide crystals in the presence of an activator

PERIODICAL: Fizika tverdogo tela, v 4, no. 2, 1962, 443 - 448

TEXT: This paper was read at the II soveshchaniye po fizike shchelochnogaloidnykh kristallov (Second Conference on the Physics of Alkali-halide Crystals) at Riga in June, 1961, and deals with processes taking place in the crystal phosphors NaCl(Ag), KCl(Ag), and KI(Tl) containing different amounts of activator. The additive coloration took place in the saturated vapor of the alkali metal (700°C with chlorides, and 650°C with iodide). Microscopic examination of decolored crystals showed the following: (1) the formation of two zones of different color intensities (but only one zone in the case of NaCl(Ag) with more than 1 mole% Ag); (2) subsequent annealing at 700°C in the air did not change the position of the zones; (3) negative crystals of quadratic or rectangular shape, the faces of which were parallel to the < 100 > axis, were formed in the colorless part of NaCl(Ag) with more than 1 mole% Ag;

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S/181/62/004/002/022/051
Particularities of the .. B101/B102

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut mineral'nogo syr'ya, Moskva (All-Union Scientific Research Institute of Mineral Raw Materials, Moscow)

SUBMITTED: September 11, 1961

Card 3/3

L 16865-63
ACCESSION NR: AR3006309

ness pauses and heating. The question is discussed of the relation of the light sums that are realized in thermal and optical de-excitation. N. Maksimova.

DATE ACQ: 15Aug63 SUB CODE: PH ENCL: 00

Card 2/2

ACCESSION NR: AT4016306

2) the main trait of a photoexcitation process is the occurrence of "atomar" centers and vacant holes; 3) energetical isolation of luminescence centers from the surrounding lattice is essential in the formation of crystallophosphors; 4) recombination luminescence intensity is proportional to the product of "atomar" luminescence centers and hole-concentrations in the valence zone; and 5) the zonal model of crystals, described in an earlier paper, explains developments hitherto unexplained (not specified clearly in the art.). Orig. art. has: 3 figures and 1 table.

ASSOCIATION: Vsesoyuzny*y nauchno-issledovatel'skiy institut mineral'nogo sy*r'ya (All-Union Scientific Research Institute of Mineral Raw Materials)

SUBMITTED: 00	DATE ACQ: 06Mar64	ENCL: 00
SUB CODE: GP	NO REF SOV: 013	OTHER: 003

Card 2/2

L 16868-63
ACCESSION NR: AR3006306

cence in photoexcited phosphors NaBr-In and KBr-In, the dependence of the stability of the electron color centers (for example, F-centers) on the depth of the hole localization levels, and others. A mechanism whereby the phosphors become de-excited after photo- and x-ray excitation is proposed. The growth in brightness of the optical flash after the dark pause in KCl-Tl phosphor and a few other laws governing the behavior of alkali-halide crystal phosphors is explained on the basis of the hole mechanism of recombination luminescence. A discussion is presented. V. Kosikhin.

DATE ACQ: 15Aug63 SUB CODE: PH ENCL: 00

Card 2/2

L 31354-65 EWT(1)/T/EEC(b)-2 IJP(c)/AFMDC/AS(mp)-2/ASD(a)-5/AFWL/SSD(a)/
RAEM(c)/ESD(gs)/ESD(t)

ACCESSION NR: AR5000760 S/0058/64/000/009/D047/D047

23
B

SOURCE: Ref. zh. Fizika, Abs 9D351

AUTHORS: Shamovskiy, L. M.; Glushkova, A. S.

TITLE. Growing of spectrometric scintillators

CITED SOURCE: Sb. Stsintillyatory* i stsintillyats. materialy*. Khar'kov, Khar'kovsk. un-t, 1963, 5-12

TOPIC TAGS: scintillator, spectrometry, crystal growth, fluorescence center

TRANSLATION: The authors assume that the fluorescence centers are produced in crystal phosphors as a result of localization of the activating impurities on the structural defects of the lattice. A new technology is proposed for growing NaI-Tl crystals, starting from this assumption and from the experimentally demonstrated independence of the yield of scintillations in a wide range of variation of the activator concentrations.

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L 31354-65

ACCESSION NR: AR5000760 0

The crystallization is carried out at a high temperature gradient, thus removing the danger of precipitation of the activator and of contaminating impurities in the form of a separate phase. To reduce the degree of "hydrolysis" of NaI, it is recommended to deoxidize the melt with reducers whose oxidation products are volatile. It is proposed to exercise control over the annealing of the crystals by monitoring the change in the crystal excitation and glow spectra. T Razumova.

SUB CODE: OP, SS ENCL: 00

Card 2/2

L 19479-63 EWP(q)/EWT(m)/EWP(b)/BDS AFFTC/ASD JD
ACCESSION NR: AT3002221 S/2941/63/001/000/0198/0202

AUTHORS: Shamovskiy, L. M.; Maksimova, N. D.

TITLE: Nature of flash brightness in NaCl-Ni under light stimulation from F-band

SOURCE: Optika i spektroskopiya; sbornik statey. v. 1: Lyuminestsentsiya. Moscow, Izd-vo AN SSSR, 1963, 198-202

TOPIC TAGS: phosphor, irradiation, M-center, recombination, optical flash

ABSTRACT: A study was made of the behavior of x-rayed NaCl-Ni phosphors under continuous and pulsed optical irradiation from the F-band. On the basis of data obtained a new interpretation is proposed of the Parfianovich effect (L. A. Parfianovich. Opt. i spektr. 2, 392, 1957). The experiment performed differed from that of Parfianovich in one respect only: the use of optical rather than thermal irradiation. It was found that under continuous F-center irradiation luminescence brightness diminishes irregularly with nickel concentration. Optical destruction of M-centers further diminishes the subsequent optical flashing, and heating the phosphor to 90-100C after destruction of M-centers results in a sharp increase in optical flash brightness. The enhancement of flashing bright-

Card 1/2

L 19479-63
ACCESSION NR: AT3002221

ness starts after heating the x-rayed phosphor NaCl-Ni. The authors also discuss the electron model of recombination luminescence. Orig. art. has: 5 formulas and 4 figures.

ASSOCIATION: none

SUBMITTED: 03Nov61 DATE ACQ: 19May63 ENCL: 00

SUB CODE: PH NO REF SOV: 004 OTHER: 005

Card 2/2

L 41031-65 EWG(a)-2/EWG(c)/EWG(j)/EWG(r)/EWG(v)/EWP(c)/EWP(k)/EWT(d)/EWT(l)/EWP(h)/
FS(v)-3/T/EWA(d)/EWP(l)/EWP(w)/EWP(v) Pe-5/Pf-4 EM/DD/DT S/0286/65/000/006/0067/0067
ACCESSION NR: AP5008558 40
B

AUTHORS: Vasil'yev, V. G.; Rodikova, L. M.; Shamova, L. M.

TITLE: An automatic device for the programmed control by a mechanism of the deflection angle of a model in a wind tunnel. Class 42, No. 169270

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 6, 1965, 67

TOPIC TAGS: deflection angle control, wind tunnel model test

ABSTRACT: This Author Certificate presents an automatic device for the programmed control by a mechanism of the deflection angle of a model in a wind tunnel (see Fig. 1 on the Enclosure). The device contains a mechanical measuring unit of the model deflection angle, designed to increase the reliability and precision of the program processing. The measuring unit in the device is made in the form of a relay circuit controlled by the contact device of the step selector. The rotor of this step selector is connected by a transmitting selsyn to the basic axis of the model deflection angle mechanism. The measuring unit uses the contour of automatic regulation, consisting of the model of the controlling block with continuous drive motion. This drive ensures the placing of the model in the zero position of the model deflection angle. Orig. art. has: 1 figure.

Card 1/2

L 41031-65

ACCESSION NR: AP5008558

0

ASSOCIATION: none

SUBMITTED: 03Jun63 ENCL: 01 SUB CODE: AC, ME

NO REF SOV: 000 OTHER: 000

Card 2/3

L 61673-65 EWT(1) Pi-4 IJP(c)

ACCESSION NR: AP5011117 UR/0051/65/018/004/0637/0643
535.377: 548.0: 620.192

AUTHOR: Shamovskiy, L. M.; Maksimova, N. D. 18 B

TITLE: Investigation of thermoluminescence of x-irradiated alkali-halide phosphors 21

SOURCE: Optika i spektroskopiya, v. 18, no. 4, 1965, 637-643

TOPIC TAGS: thermoluminescence, alkali halide phosphor, recombination, x irradiation, activator center

ABSTRACT: The thermoluminescence and optical flashing were investigated under pulsed illumination in the F-band. It was found that the optical flash increases without time lag, and decreases in two stages, the slowly damped component (secondary phosphorescence) lasting as much as 5 minutes. In KCl(Tl) this phosphorescence decreases with decreasing primary phosphorescence at room temperature. Subsequent heating causes it to rise and go through a maximum near +85C, where a new thermoluminescence peak is observed, credited to V_2 centers. The phenomena observed are explained on the basis of the hole scheme of recombination luminescence, wherein the radiation of the light sum stored in alkali-halide phosphors following x-

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L 61673-65

ACCESSION NR: AP5011117

irradiation is the result of recombination of holes with electrons localized in the activator luminescence centers. The phosphorescence observed immediately after excitation corresponds to thermal release of the holes from shallow levels and their recombination with atomic luminescence centers produced during the course of excitation. The thermoluminescence peaks correspond to release of electron-hole pairs from the capture levels and their recombination on the activator luminescence centers. Orig. art. has: 4 figures and 1 formula.

ASSOCIATION: None

SUBMITTED: 07Jun63 ENCL: 00 SUB CODE: OP, NP

NR REF SOV: 010 OTHER: 001

llc

Card 2/2

L 61665-65 EWT(1) Pi-4 IJP(c)
ACCESSION NR: AP5011136 UR/0051/65/018/004/0728/0729
537.531: 535.37

15
B

AUTHOR: Shamovskiy, L. M. 21

TITLE: X-ray luminescence of the NaI(Tl) phosphor

SOURCE: Optika i spektroskopiya, v. 18, no. 4, 1965, 728-729

TOPIC TAGS: x-ray luminescence, crystal phosphor, luminor, scintillation counter, luminescence quenching

ABSTRACT: The purpose of the investigation was to determine the properties of an NaI(Tl) luminor prepared under the best conditions. The luminescence was registered by a filter with a photomultiplier, and was recorded with a chart potentiometer. At room temperature the x-ray luminescence was produced without lag. No luminescence was detected in the stationary glow of the protracted component. No F centers were detected in the excited absorption spectrum. After removing the x-ray excitation, the luminescence decayed with small time lag. Prolonged afterglow could be seen only when the signal from the photomultiplier was considerably amplified. The results

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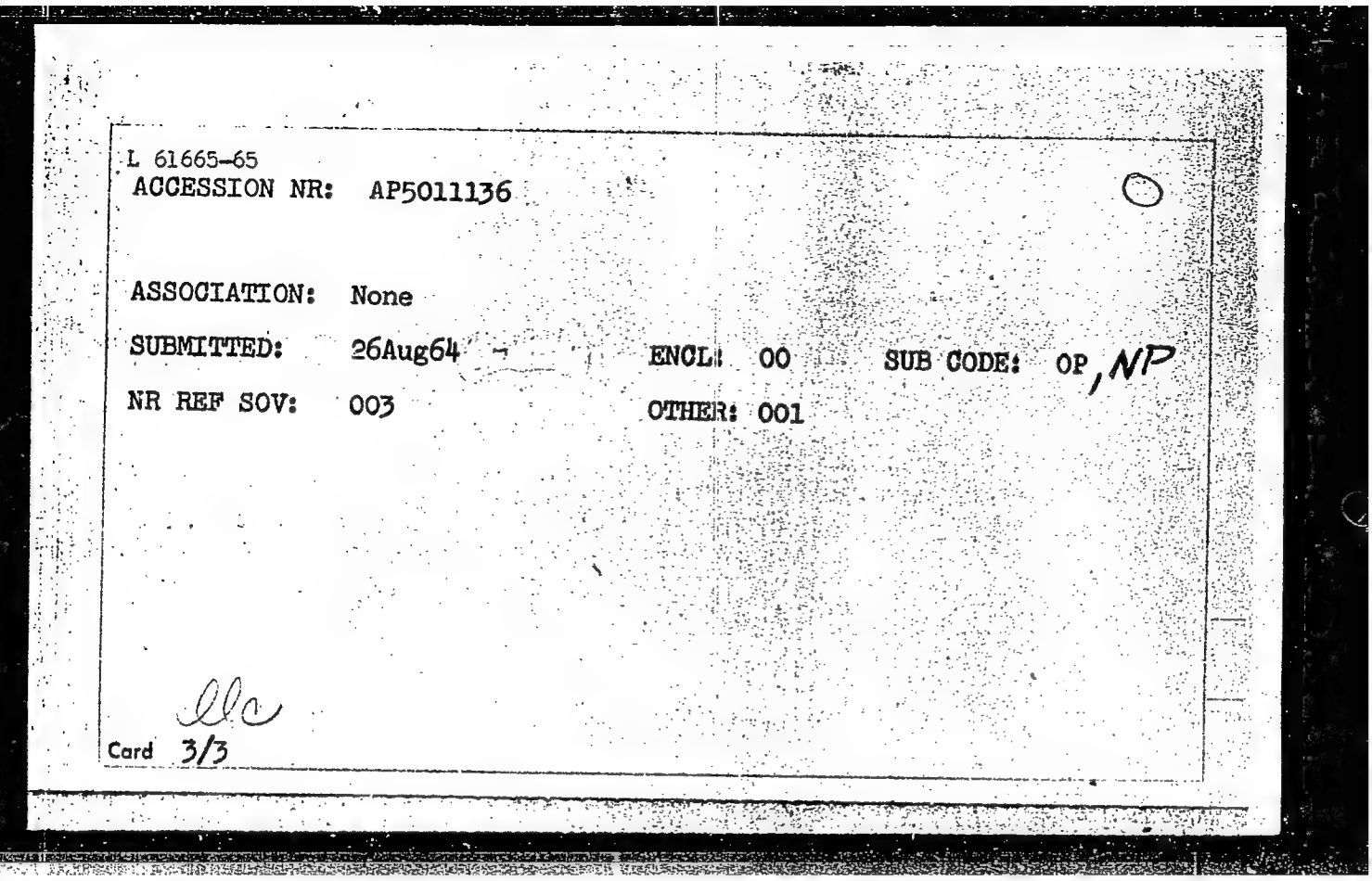
L 61665-65

ACCESSION NR: AP5011136

show that in NaI(Tl) luminor prepared under the best conditions the yield of the low-inertia component in the stationary x-ray luminescence brightness is independent of the temperature up to the start of the intracenter quenching. No storage of the light sum occurs in shallow trapping levels. Under high doses of x-ray excitation, there was observed coloring of the samples due to the release of iodine and formation of equilibrium with V centers. Is is concluded that only a low-lag x-ray luminescence is reduced in NaI(Tl) scintillators prepared from pure salts under the best conditions. The brightness of the x-ray luminescence is practically constant from 293 to 473K. The long-lasting component in the stationary luminescence constitutes less than 1 per cent. The stored light sum is determined by the formation of hole levels with a depth of 0.69 eV. De-excitation occurs when holes are thermally liberated from V levels and are recombined with electrons trapped in activator luminescence centers. Pulsed or stationary illumination in the F-band region does not affect the stationary brightness of the x-ray luminescence or the de-excitation process of the light sum. Original article has: 1 figure

Card 2/3



L 61665-65
ACCESSION NR: AP5011136

ASSOCIATION: None

SUBMITTED: 26Aug64 ENCL: 00 SUB CODE: OP, NP

NR REF SOV: 003 OTHER: 001

llc

Card 3/3

L 64501-65 EWT(l)/EWT(m)/EWP(t)/EWP(b) IJP(c) JD/JG

ACCESSION NR: AP5012616 UR/0051/65/018/005/0874/0879
537.531:535.373.1

AUTHORS: Shamovskiy, L. M.; Maksimova, N. D.

TITLE: De-excitation of the light sum in x-irradiated alkali-halide phosphors by stationary additional illumination in the F-band

SOURCE: Optika i spektroskopiya, v. 18, no. 5, 1965, 874-879

TOPIC TAGS: luminor, optic activity, activated crystal, alkali halide, F band, recombination luminescence

ABSTRACT: The optical de-excitation of the crystal phosphors KCl(Tl) and NaCl(Ni) which are x-irradiated at room temperature is investigated at different temperatures. In the case of NaCl(Ni) crystals with large activator concentration and a small x-ray dose, it was possible to emit practically the entire light sum both at room temperature and at temperature of liquid nitrogen. In the same phosphor with lower activator concentration, the efficiency of stationary de-excitation in the F-band was noticeably lower at liquid nitrogen tem-

Card 1/2

L 64501-65

ACCESSION NR: AP5012616

perature than at room temperature. In KCl(Tl) under analogous experimental conditions, an appreciable fraction of the light sum is also realized. No noticeable time delay, other than the delay due to the apparatus, was observed in the de-excitation light pulse. The results are explained on the basis of the hole recombination luminescence scheme proposed by one of the authors earlier (with P. A. Pippins, Izv. AN SSSR ser. fiz. v. 25, 31, 1961). A new mechanism of optical de-excitation of crystal phosphors is proposed, in which the holes are released from the V_2 centers and recombined with the activator centers (Ni^+). Various processes which make this mechanism effective are briefly described. Orig. art. has: 3 figures.

ASSOCIATION: None

SUBMITTED: 07Jun63 ENCL: 00 SUB CODE: OP

NR REF SOV: 007 OTHER: 004

Card 2/2

L 2825-66 EWT(l)/EWT(m)/EWP(t)/EWP(b) LJP(c) JD

ACCESSION NR: AP5016173 UR/0051/65/018/006/1011/1018

535.373.1

AUTHORS: Shamovskiy, L. M.; Dunina, A. A.; Gosteva, M. I.

TITLE: Study of the mechanism of recombination luminescence in the phosphor NaCl(In^{3+})

SOURCE: Optika i spektroskopiya, v. 18, no. 6, 1965, 1011-1018

TOPIC TAGS: luminor, luminescence, x ray irradiation, luminescence center, luminescence quenching, recombination luminescence

ABSTRACT: The samples for the study were grown from a melt in quartz ampoules, using a method described elsewhere (Izv. AN SSSR ser. fiz. v. 22, 3, 1958). The crystals were excited by x-rays at different temperatures and the build up of luminescence and subsequent thermal de-excitation were investigated. The brightness was measured with a photomultiplier (FEU-29) and recorded with an automatic potentiometer. The intensity of the stationary x-ray luminescence was low at room

Card 1/2

L 2825-66
ACCESSION NR: AP5016173

temperature, being one order of magnitude less than the brightness produced in KCl(Tl). The maximum intensity is reached 3.5 minutes after the start of the excitation. Approximately 50 per cent of the total brightness increases instantaneously, and the phosphorescence quenching is also faster than hyperbolic, the stationary brightness dropping 90 per cent without a time delay. The maximum attainable brightness increases with increasing temperature. The thermal de-excitation curve exhibits three peaks with maxima at 50, 95, and 190C (at a heating rate of 10 deg/min). The first peak is approximately twelve times stronger than the second and 24 times stronger than the third. Some secondary peaks appear at lower temperatures. The results are interpreted from the point of view of the hole mechanism of recombination luminescence. Orig. art. has: 3 figures, 1 formula, and 1 table.

ASSOCIATION: None

SUBMITTED: 07Jun63 ENCL: 00 SUB CODE: OP

NR REF SOV: 011 OTHER: 001

B/K
Card 2/2

L 4447-66 EWT(1)/EWT(m)/EWP(t)/EWP(b) IJP(c) JD

ACCESSION NR: AP5017898 UR/0051/65/019/001/0102/0107

535.377

AUTHORS: Shamovskiy, L. M.; Kosikhin, V. F.

TITLE: Study of optical and thermal de-excitation of the NaCl(Cu) phosphor

SOURCE: Optika i spektroskopiya, v. 19, no. 1, 1965, 102-107

TOPIC TAGS: sodium chloride, activated crystal, thermoluminescence, luminescence quenching, recombination luminescence

ABSTRACT: The purpose of the investigation was to check whether the de-excitation mechanism of the light sum (S) stored in alkali-halide phosphors excited by x-rays is brought about by release of electrons from the trapping levels or whether the de-excitation is due to recombination of electrons trapped in activator centers with holes.

NaCl(Cu) was chosen because the Cu^+ ions can trap both electrons and holes. The single crystals were grown by the Kiropoulos method. The activator amounted to 0.1 -- 1.5 molar per cent. The single crystals

Card 1/3

were excited with x-rays for twenty minutes at room temperature. The luminescence was recorded with a photomultiplier-potentiometer combination. Phosphorescence was observed at room temperature after interruption of the x-ray irradiation. Thermal de-excitation was obtained after a phosphorescence decay time of twenty minutes. Plots are presented of the absorption coefficient as a function of the CuCl concentration in the NaCl and of the thermoluminescence peaks at different CuCl concentrations, and a table of the light sums obtained is presented for the different concentrations. The results show that the light sum stored during x-ray excitation increases in the NaCl(Cu) phosphor with larger activator concentration, because of hole trapping by the activator ions located in the lattice points of the mixed crystal. The light sum emitted during the optical and thermal de-excitations is equally increased. The long afterglow and the M peak are increased. Recombination losses in the F peak are considerably increased because of external quenching. The results thus indicate that the de-excitation is due to electron-hole recombination. Orig. art. has: 4 figures and 1 table.

L 4447-66

ACCESSION NR: AP5017898

ASSOCIATION: None

SUBMITTED: 07Jun63 ENCL: 00 SUB CODE: OP, SS

NR REF SOV: 009 OTHER: 002

Card 3/3

L 11080-66

ACC NR: AP5027670 SOURCE CODE: UR/0051/65/019/005/0776/0782

AUTHOR: Shamovskiy, L. M.; Dunina, A. A.

ORG: none

TITLE: Growth of initial brightness of roentgenoluminescence in an alkaline-halide luminophor during repeated excitation

SOURCE: Optika i spektroskopiya, v. 19, no. 5, 1965, 776-782

TOPIC TAGS: luminescence, sodium chloride, potassium bromide, ionization, luminophor, F band, x ray irradiation

ABSTRACT: This work is a continuation of the authors' previous investigations (Opt. i spektr. 18, 637, 1965, Opt. i spektr. 18, 874, 1965, and 18, 1011, 1965) on the roentgenoluminescence of an X-ray-irradiated luminophor. The effect of an additional short illumination from F-bands on the stationary luminescence brightness was studied to interpret the phenomenon. Crystals of NaCl, KBr, and NaBr, activated by In^{3+} ions were used in the study. The authors detected an increase in the initial brightness of the roentgenoluminescence during repeated excitation of luminophor KBr (In^{3+}) at -20, -35, -45, and -58C. In all cases the duration of interruption between repeated excitations did not affect the brightness of subsequent roentgenoluminescences. The additional illumination from F-bands affected the roentgenoluminescence of crystals in three ways: (1) it caused a rapid growth of luminescence brightness; (2) it

Card 1/2 UDC: 537.531 : 535.37

ACC NR: AP7001327 SOURCE CODE: UR/0371/66/000/005/0015/0019

AUTHOR: Chernyak, V. G. — Cernaks, V.; Dunina, A. A. — Dunina, A.; Larionov, M. G. — Larionovs, M.; Plyavinya, I. K. — Plavina, I.; Shamovskiy, L. M. — Samovskis, L.; Tale, A. K. — Tale, A.

ORG: Physics Institute AN LatSSR (Institut fiziki AN Latv. SSR)

TITLE: Photoscintillations of KCl-Tl excited in the F-band

SOURCE: AN LatSSR. Izvestiya. Seriya fizicheskikh i tekhnicheskikh nauk, no. 5, 1966, 15-19

TOPIC TAGS: scintillation, light excitation, excitation spectrum, f band

ABSTRACT: An investigation was made of the rapid transfer of energy from F-centers to activator centers and of the time necessary for such transfer when the crystals are subjected to pulsed excitation. The investigation was based on the comparison of the kinetics of activator luminescence excited directly in the center of luminescence (Tl-scintillation) and in the F-absorption band (F-scintillation). KCl-Tl-F crystals (0.2 or 0.5 mol% Tl in melt) were irradiated with x- or gamma rays. The concentration of F-centers did not exceed 5×10^{17} cm^{-3}. The crystals were placed in a metallic cryostat and excited with light pulses ($\sim 10^{-7}$ sec) from a spark. The excitation was applied alternately in the 247 and 560 nm bands. A coincidence was found between F-scintillation and Tl-scintillation with regard to their time

Card 1/2

S/058/62/000/006/041/136
A061/A101

24,3500

AUTHOR: Shamovskiy, L. M.

TITLE: General rules for the choice of the optimum conditions of spectrometric scintillator growth by the Stokbarger method

PERIODICAL: Referativnyy zhurnal, Fizika, no. 6, 1962 57, abstract 6V395 (In collection: "Rost kristallov. T. 3". Moscow, AN SSSR, 1961, 308 - 315. Discuss., 501 - 502)

TEXT: The use of the Stokbarger method for growing alkali-halide crystal phosphors of high conversion efficiency and good resolution is discussed. The basic points of the conception according to which the luminescence centers in crystal phosphors are located on the contact surfaces of a polyhedral substructure are indicated and shown to diverge from the universally adopted Zeyts model, in which the activator atoms in the regular lattice points are the luminescence centers. For improving the quality of scintillators, it is suggested that they be grown at high temperature gradients. The optimum conditions of crystallization are determined. Good crystal annealing and purity of initial salts are noted as being important factors.

[Abstracter's note: Complete translation]

V. Kosikbin

Card 1/1

BRESLER, S.Ye.; SHAMPAN', M. [Champagne, M.]; FRENKEL', S.Ya.

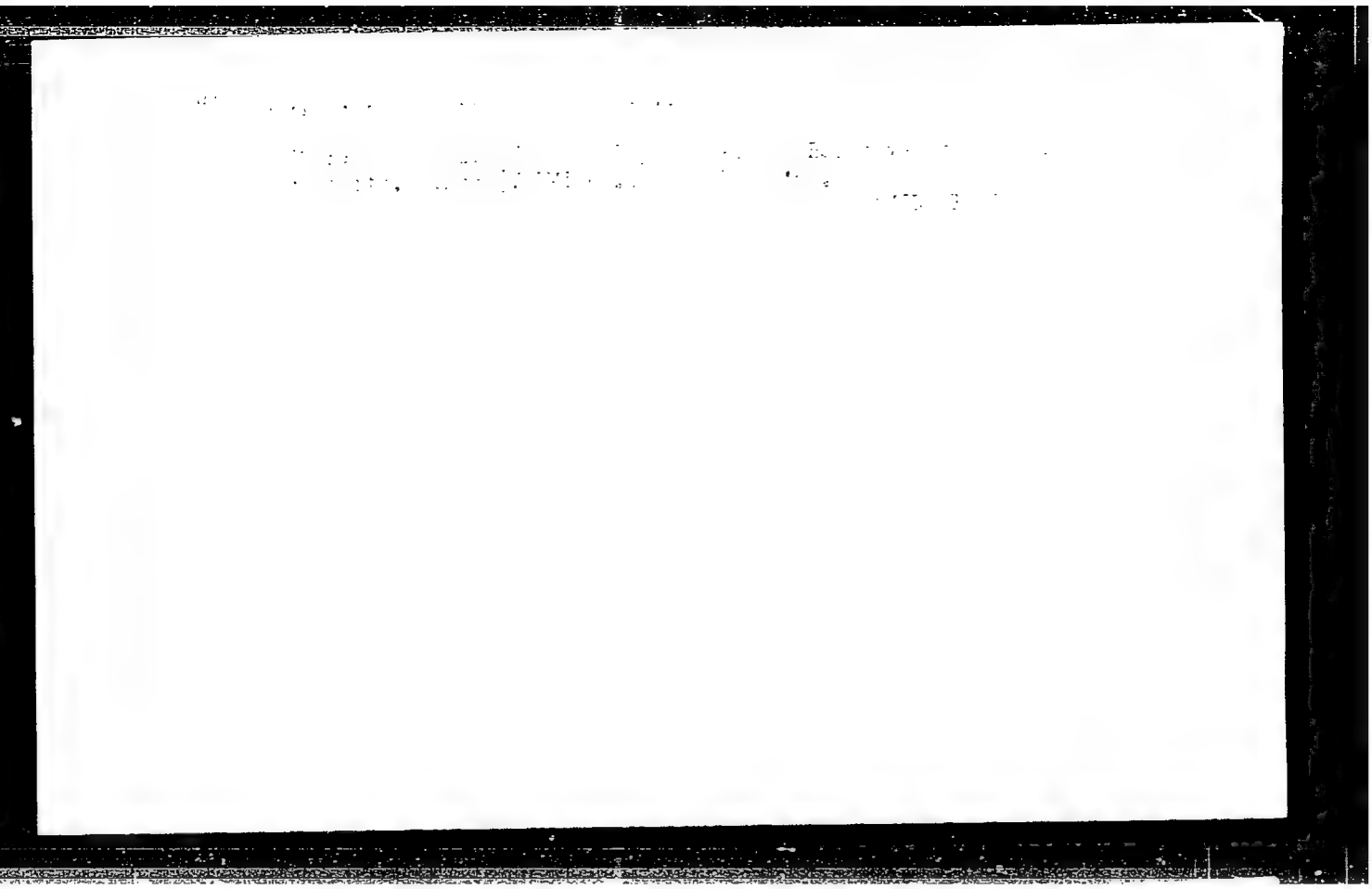
Study of enzymatically active trypsin I fragments. Biokhimiia 26 no.5:909-915 S-O '61. (MIRA 14:12)

1. Institute of High Molecular Compounds, Academy of Sciences, of the U.S.S.R., Leningrad.

(TRYPSIN)

SHAMPANOV, M.D.; KOVTUH, A.S.

Certain results for 1952 in controlling helminthiasis, malaria and diseases transmitted by mosquitoes in the R.S.F.S.R., and problems to be solved in the near future. Med.paraz.i paraz.bol. no.4:299-305 Jl-Ag '53. (MLRA 6:9)
(Worms, Intestinal and parasitic) (Malarial fever)
(Insects as carriers of contagion)



S/226/62/000/006/006/016
E193/E383

AUTHORS: Fedorov, T.F., Nedumov, N.A., Polyakova, M.D. and Shampay, F.I.

TITLE: Some data on the ternary titanium-boron-chromium system

PERIODICAL: Poroshkovaya metallurgiya, no. 6, 1962, 42 - 49

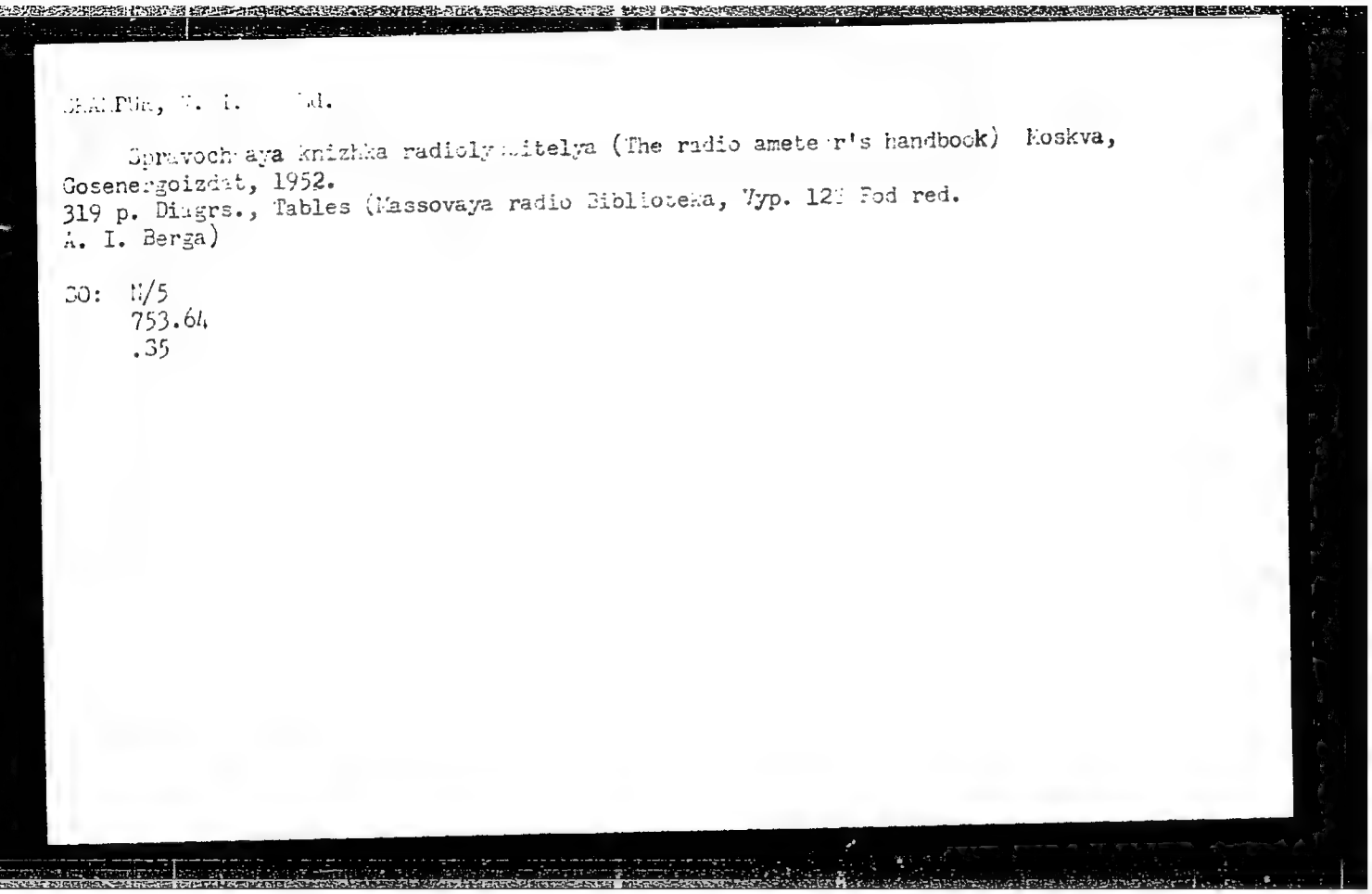
TEXT: The object of the present investigation was to study the constituents of the Cr-B and Ti-B-Cr systems. In the first stage of the investigation, thermal and metallographic analysis as well as hardness and microhardness measurements, conducted on Cr-B alloys with up to 40 at.% B, cooled slowly to room temperature or quenched from 1450 °C, were used to construct the Cr end of the constitution diagram of the Cr-B system. In the second stage, the same experimental technique and, in some cases, X-ray diffraction analysis, were used to study the Ti-B-Cr system. The experimental alloys included the following: some binary Ti-B, B-Cr and Ti-Cr alloys; alloys of the pseudo-binary $TiB-CrB$, TiB_2-CrB_2, $TiCr_2-CrB$, $Ti-CrB_2$, $Ti-Cr_5B_3$ and $Cr-TiB_2$ systems;

Card 1/2

SHAMPO, Z. A.

"Investigation of the Pyro Effect, Piezoelectric Properties, and Complete Polarization of Polycrystalline Barium Titanate." Cand Phys-Math Sci, Leningrad State Pedagogical Inst, Leningrad, 1954. (KL, No 1, Jan 55)

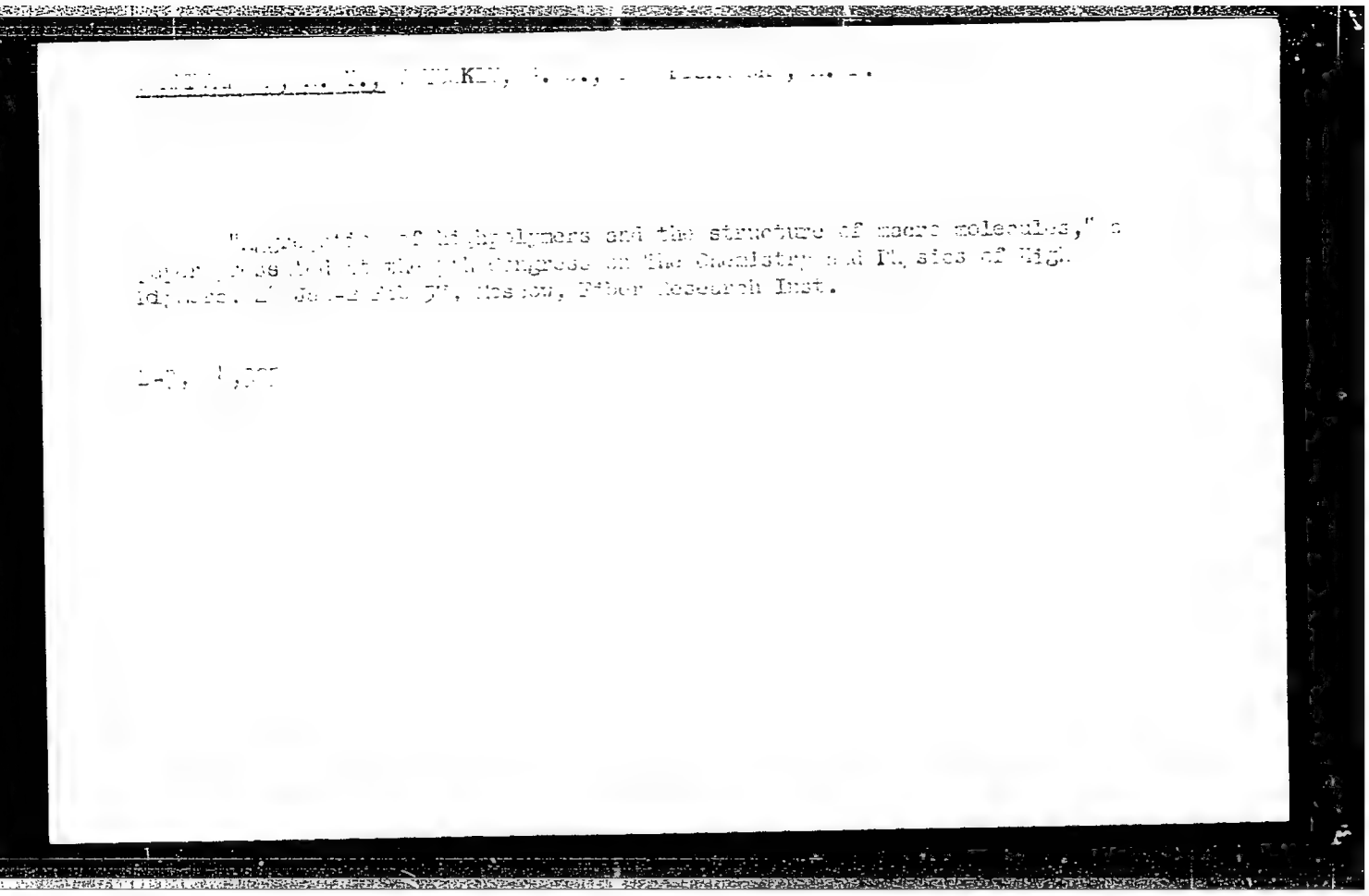
Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (12)
SO: Sum. No. 556, 24 Jun 55



[illegible], V. I. [illegible] ed.

Spravochnaya knizhka radiolyubitelya (The radio amateur's handbook) Moskva, Gosenergoizdat, 1952.
319 p. Diagrs., Tables (Massovaya radio Biblioteka, Vyp. 12) Pod red. A. I. Berga)

SO: N/5
753.64
.35



"... of biopolymers and the structure of macro molecules," a paper presented at the 7th Congress on the Chemistry and Physics of High Molecules, 27 June-3 July 57, Moscow, Fiber Research Inst.

[illegible], 4,227

SHAMRAKOV, A.

Let's make use of additional intra-factory production resources.
Zhil.-kom.khoz. 5 no.7:9-10 '55. (MLRA 9:1)

1.Glavnyy tekhnolog vagonoremontnogo zavoda Gor'kovskogo tramvayno-trolleybusnogo upravleniya.
(Gorkiy--Trolley buses--Maintenance and repair)

ALMAZOYEVA, V. V.; BATAYEV, P. S.; STAVROVSKAYA, V. I.; AKSEYENKO, G. R.; BEZZUBOVA, V. P.; VOROB'YEVA, Z. G.; GLADKIKH, V. F.; ZHUKOVA, L. I.; ZUYEVA, N. K.; KOROGODINA, Yu. V.; KLIMOVA, L. P.; KRYLOV, A. S.; MASLOV, A. V.; PEYKRE, A. E.; SADOVSKAYA, G. Yu.; SPERANSKAYA, V. N.; SOLOVEY, V. Ya.; TURCHINS, M. Ye.; SHAMRAY, A. F.; SHIPITSINA, N. K.; SHINKEVICH, M. A.

Field trials of new repellents. Med. paraz. i paraz. bol. no.4: 457-464 '61. (MIRA 14:12)

1. Iz entomologicheskogo otdela i otdela sinteticheskikh preparotov Instituta meditsinskoy parazitologii i tropicheskoy meditsiny imeni Ye. I. Martsinovskogo Ministerstva zdravookhraneniya SSSR (dir. - instituta - prof. P. G. Sergiyev, zav. otdelami - prof. V. N. Beklemishev i prof. V. I. Stavrovskaya)

(INSECT BAITS AND REPELLENTS)

SHAMRAY, A.Ye.

Preparing students for working life. Politekh. obuch. no.9: 22-25 S '58. (MIRA 11:10)

1. Direktor Ushchel'novskoy sredney shkoly No.8 g.Yalty.
(Yalta--Vocational education)

SHAMRAY, A.Ye.

Effect of galascorbin on hemopoiesis in benzene poisoning. Vrach. delo no.11:104-108 N '62. (MIRA 16:2)

1. Patofiziologicheskaya laboratoriya (rukovoditel' - doktor med. nauk F.A. Gluzman) Kiyevskogo instituta perelivaniya krovi i neotlozhnoy khirurgii.
(HEMOPOIETIC SYSTEM) (BENZENE IN THE BODY)

Ivanov, B. V. - "An Analysis of the Operation of Two-Stage Differential Variable Amplifiers with Mixers in Stable Operation, and a Method of Calculating Them." Leningrad Electrical Engineering Inst imeni V. I. Ul'yanov (Lenin). Leningrad, 1956 (Dissertation for the Degree of Candidate in Technical Sciences).

So: Knizhnaya Letopis', No. 1 , 1956, pp 110-127

SOV/144-58-9-18/18

AUTHOR: Gikis, A. F., Candidate of Technical Sciences, Docent

TITLE: Inter-University Scientific Conference on Electric Measuring Instruments and Technical Means of Automation (Mezhvuzovskaya nauchnaya konferentsiya po elektroizmeritel'nym priboram i tekhnicheskim sredstvam avtomatiki)

PERIODICAL: Izvestiya Vysshikh Uchebnykh Zavedeniy, Elektromekhanika, 1958, Nr 9, pp 130-135 (USSR)

ABSTRACT: The conference was held at the Leningradskiy elektrotekhnicheskiy institut imeni V. I. Ul'yanova (Lenina) (Leningrad Electro-technical Institute imeni V. I. Ul'yanov (Lenin)) on November 11-15, 1958. The representatives of eleven higher teaching establishments and three research institutes participated and a large number of specialists of various industrial undertakings were present.

Candidate of Technical Sciences B. V. Shamray (Leningrad Electrotechnical Institute) presented the paper "Low inertia transducer of thermo e.m.f. into a d.c. voltage", operating with magnetic elements of an input resistance of 100 Ohm, a signal of 0.001 V and an output voltage of 40 V with a resistance of 4000 Ohm.

Card 6/13

Docent G. A. Alizade (Azerbaydzhan Industrial Institute imeni M. Azizbekov) presented the paper "New d.c. metering transducers with a high input resistance" (phase sensitive transducer in d.c. compensators and particularly its application in the chemical industry).

Docent P. V. Novitskiy (Leningrad Electrotechnical Institute) presented the paper "Apparatus for measuring vibration parameters", described a piezo-electric accelerometer with a range of 10 to 10 000 c.p.s., a sensitivity of 3 to 7 mV/m/sec^2 with an error of up to 2.5%.

Candidate of Technical Sciences D. A. Borodayev (Ural Polytechnical Institute) presented the paper "Instruments for ultra-sonic monitoring of the level and the pressure of liquids" which was one of a series of papers on measuring non-electrical magnitudes by electric methods.

Card 7/13

3/194

S/194/62/000/003/025/066
D230/D301

9.8000 (also 3304, 5105, 9907)

AUTHORS: Burakov, Ye. B., Zotov, V. G., Nesterov, A. A. and Shamray, B. V.

TITLE: Magneto-semiconductor amplifier for the conversion of thermal e.m.f. into d.c.

PERIODICAL: Referativnyy zhurnal, Avtomatika i radioelektronika, no. 3, 1962, abstract 3-2-160m (Izv. Leningr. elektrotekhn. in-ta, 1961, vyp. 45, 194-200)

TEXT: In cyclic telemetry systems, the number of controlling facilities is determined by the length of the cycle and by the resolution ability of the converters. The function of the amplifier described is to provide a low-inertia, high-sensitivity converter having high stability and reliability. Such converters usually consist of an input signal amplifier and a functional converter. A magneto-semiconductor amplifier is described for operation with thermo-couples all of standard calibration. The sensitivity of the amplifier is 1.43×10^{-12} V, gain 2.7×10^{5}. Signals entering at

Inp

Card 1/2

-otifier

Output

Card 2/

39213
S/263/62/000/007/012/014
I007/I207

AUTHOR: Burakov, E. B., Zotov, V. G., Nesterov, A. A. and Shamray, B. V.

TITLE: Magnetic semiconductor amplifier for the conversion of thermoelectromotive force into d.c. voltage

PERIODICAL: Referativnyy zhurnal, otdel'nyy vypusk. Izmeritel'naya tekhnika, no. 7, 1962, 49, abstract 32.7.318. "Izv. Leningr. elektrotekhn. in-ta", no. 45, 1961, 194–200

TEXT: Description is given of a magnetic semiconductor amplifier for conversion of thermoelectromotive force into d.c. voltage according to the a.c. amplifying method. The amplifier consists of three components—modulator, a.c. amplifier and rectifier. The modulator is a magnetic voltage amplifier with a double-frequency output, permitting separate adjustment of modulus and phase in the a.c. windings, and hence equalization of odd (uneven) harmonics. The modulator is fed from a semiconductor RC-generator of 8.5 kcs. At an input voltage of about 4 to 5 Mv, the amplifier has satisfactory linear characteristics. The output resistance is 70 ohms, the sensitivity 10 microvolts and the voltage amplification 4000 volts. The amplifier is designed for a load of 4000 ohms.

[Abstracter's note: Complete translation.]

Card 1/1

SHAMRAY, Boris Viktorovich; TIMOFEYEV, A.V., prof., nauchn. red.; YEVSEYEV, V.I., tekhn. red.

[Electromagnetic devices] Elektromagnitnye ustroistva. Leningrad, Leningr. elektrotekhn. in-t im. V.I.Ul'ianova (Lenina). No.2. [Magnetic amplifiers] Magnitnye usiliteli; uchebnoe posobie. 1962. 148 p. (MIRA 17:3)

L 25573-66 EWT(d)/EWP(c)/EWP(v)/T/EWP(k)/EWP(h)/EWP(l)

ACC NR: AM6010192 Monograph UR/

57
B+1

Aranovich, Boris Il'ich; Shamray, Boris Viktorovich

Electromagnetic automation devices (Elektromagnitnyye ustroystva avtomatiki) Moscow, Izd-vo "Energiya", 1965. 484 p. illus., biblio. 23,000 copies printed.

TOPIC TAGS: automatic control equipment, electric relay, electromagnetic component, direct current, electromechanic converter, parametric converter, magnetic amplifier

PURPOSE AND COVERAGE: This book is intended for students in schools of higher education in courses on automation, telemechanics, electrical measurements, computers, and the electrification of industrial enterprises. It can also be used by technical personnel in industrial enterprises or design offices dealing with automation problems. The authors thank Doctor of Technical Sciences [illegible] I. Yurevich and Docents V. I. Nefedova and Ye. B. Yelagin for [illegible], and Assistant G. N. Kabanova for helping in the compilation of the manuscript.

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Card 1/11 UDC 523.2

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ACC NR: AM6010192

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L 25573-66
ACC NR: AM6010192 O

Card 5/11

L 25573-66

ACC NR: AM6010192 O

Card 6/11

L 25573-66

ACC NR: AM6010192 O

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